

# Exhibit 17

**UNITED STATES DISTRICT COURT  
EASTERN DISTRICT OF PENNSYLVANIA**

IN RE: NATIONAL FOOTBALL LEAGUE PLAYERS' CONCUSSION INJURY LITIGATION	No. 2:12-md-02323-AB MDL No. 2323
Kevin Turner and Shawn Wooden, <i>on behalf of themselves and others similarly situated,</i>  Plaintiffs,  v.  National Football League and NFL Properties, LLC, successor-in-interest to NFL Properties, Inc.,  Defendants.	Hon. Anita B. Brody  Civil Action No. 2:14-cv-00029-AB
THIS DOCUMENT RELATES TO: ALL ACTIONS	

**DECLARATION OF DAVID ALLEN HOVDA, PhD.**

DAVID ALLEN HOVDA, PhD., hereby declares as follows:

1. I have personal knowledge concerning the matters addressed herein, and submit this declaration in connection with Plaintiffs' motion for approval of the proposed settlement of claims in this litigation. If called as a witness, I could and would testify competently to the facts and opinions expressed herein. All of the opinions expressed in this declaration I hold to a reasonable degree of scientific certainty.

2. I currently serve as a Professor in the Departments of Neurosurgery and Molecular and Medical Pharmacology at the David Geffen School of Medicine at UCLA, Los Angeles, California. I also currently serve as the Vice Chair of Academic Affairs, in

the Department of Neurosurgery at the David Geffen School of Medicine at UCLA. My complete curriculum vitae is attached as Tab A. I highlight below some of my experience, research, and qualifications relevant to the opinions expressed herein.

3. I have multiple degrees in Psychobiology and a postdoctoral degree in Neurophysiology. I am the Director of the UCLA Brain Injury Research Center and have served in that capacity since 1992. Over the course of my tenure as Director of the BIRC, I have managed a \$5 million per year budget, overseeing traumatic brain injury research from as many as 25 faculty from 8 different departments throughout the University. During my tenure, I have launched the University of California Neurotrauma Research Program that actively funds research proposals from all University of California campuses. In my capacity as Vice Chair of Academic Affairs Department, I am responsible for overseeing all academic personnel matters for the Department of Neurosurgery. This includes, but not limited to, the supervision of dossier preparation, writing letters of review for candidates, and advising the Chairman regarding matters associated with the University of California Academic Personnel guidelines and procedures.

4. As Director of the UCLA Brain Injury Research Center, I oversee research training for graduate and post-graduate students. I also help in the construction of grant applications, review manuscripts prior to submission for publication and coordinating the general neuroscientific education of the faculty and residents associated with the UCLA Brain Injury Research Center.

5. I have served as the Chair of the National Institutes of Health Study Section NSD-A (2001-2003), Brain Injury and Neurovascular Pathologies (2005-2008)

and Multi-Drug Combinations to Promote Neurological Recovery in Traumatic Brain Injury (2009) for NINDS. I have held numerous positions in National and International Societies, including serving as President of the National (2008-2009 and 2009-2011) and International (2009-2011) Neurotrauma Societies.

6. I have held numerous positions on National and International Committees, including the following positions: Defense and Veterans Brain Injury Center: Member, Scientific Advisory Board International Scientific Advisory Board – Uppsala University, Uppsala, Sweden Brain and Spinal Injury Center: Scientific Advisor, ICP 2007 Brain Injury Association of California, Board of Directors Department of Defense, Defense Health Board, Traumatic Brain Injury: External Advisory Subcommittee Department of Defense Post-Traumatic Stress Disorder and Traumatic Brain Injury Clinical Consortium (INTRuST): Scientific Advisory Board Brain Injury Association of America Board of Directors Department of Defense, Defense Health Board University of Maryland External Advisory Committee Department of Defense, U.S. Army Medical Research and Materiel Command, Combat Casualty Care Research Program, Neurotrauma Steering Committee National Academy of Neuropsychology Foundation, Board of Trustees Cohen Veterans Center, Advisory Board Pediatric Neurocritical Care Research Group

7. I serve as a member of the Editorial Board of several brain-injury related organizations and act as a peer publication reviewer for dozens of journals, including the Journal of Neuroscience, Neurology, Journal of Neuroscience Research, Brain, Journal of Neurosurgery, and the New England Journal of Medicine.

8. I have served in the past and continue to serve as a Consultant and Advisor to many organizations, including the National Football League (1998-1999), the World

Boxing Council, the New Jersey Commission on Brain Injury Research, the Medical Advisory Board, Sports Legacy Institute, and the U.S. Department of Defense, TBI/PTSD Advisory Panel, 2009 to the present.

9. Current pertinent research grants include: “UCLA Program in Memory Restoration”, Dept. of Defense, “TBI-Induced Cerebral Metabolic Depression and Recovery”, NIH, and “Using glutamatergic pharmacotherapy to optimize TBI recovery”, NIH.

10. I have been an invited lecturer or speaker at hundreds of professional meetings involving a host of topics related to brain injury. Some of the more recent and relevant topics include: “Updates and Advances in the Neuroscience of Concussion”, Sports Psychology Society Meeting and Symposium, 2013; “The Neurometabolic Cascade of Traumatic Brain Injury”, American Association of Neuropathologists, 2013; “Mild TBI and Mental Health”, US Secretary of Defense Symposium on Traumatic Brain Injury, The Pentagon, 2013; “Metabolic Management of Brain Injury”, University of Texas Southwestern Medical Center, 2014; and, “The Neurochemical and Neurometabolic Cascade of TBI and its Effect on Long Term Outcome”, Casa Colina Centers for Rehabilitation, 2014.

11. I have published at this date 175 peer reviewed papers and many of them relate to research and clinical work regarding brain injury and the physical and developmental outcome, including the neurophysiology of concussion and the physical and psychological outcome from chronic traumatic brain injury.

12. Throughout my career, I have taught medical students and physicians and psychologists through courses and training sessions in the areas of anatomy,

neuroanatomy, psychobiology, neurophysiology, neuroimaging, neuroscience, neurosurgery, histology, behavioral analysis, statistical analysis, and electrophysiology. I have been involved in the training of neurosurgical residents and others. Many of the topics I have taught relate to my professional work regarding brain injury, concussion, TBI, and the resulting physical and psychological issues associated with long-term outcome for patients with TBI.

13. My statements and views included in this declaration are mine alone and do not reflect those of UCLA or any of the departments or centers with which I am associated. I have not received any financial payments for preparing this Declaration from any source, including any attorney or plaintiff in this case. I have requested that any monies paid for the work conducted in this matter be made payable to the Regents of the University of California which allows the money to be used for research and teaching activities.

14. A concussion is an active physiological process induced by biomechanical forces that result in brain dysfunction. It is a 'brain movement injury'. This dysfunction commonly manifests with headaches, confusion, memory impairment, dizziness, slowed responsiveness, incoordination, and personality change. A concussion does not require a loss of consciousness. A concussive event can occur from a direct impact to the head or from an indirect impact causing motion of the head, resulting in translational and/or angular acceleration of the brain.

15. Upon concussion (or mild traumatic brain injury) there is a massive flux of ions that is related to a discharge of neurons resulting in the release of the excitatory amino acid glutamate. This produces an energy crisis in the brain and results in

depolarization, which is responsible for the neurological deficits experienced.

16. There is no scientifically determined threshold of impact force or acceleration to the brain to predict or diagnose that a person has suffered a concussion. A person's susceptibility to suffer a concussion is extremely variable. Epidemiological studies demonstrate that female athletes are more prone to concussion than male athletes. Younger athletes (high school age) appear to take longer to recover from concussions than do older (adult/college) athletes.

17. Following a concussion, cerebral physiology can be adversely affected for days or weeks. Symptoms of concussion can include confusion, disorientation, unsteadiness, dizziness, headache, and visual disturbances. These symptoms often arise without a detectable anatomic pathology and often resolve completely over time, suggesting that they are based on temporary neuronal dysfunction rather than cell death. However, some individuals (approximately 15-20%) have reported to experience post-concussive symptoms for extended period of time with women being more sensitive than men. The reason for these individual differences is as yet unclear.

18. Current research confirms that a person who has suffered a concussion is at increased risk to sustain additional injury, including another concussion. Some of this risk is due to recoverable factors, like biological vulnerability, impaired reaction time, in coordination, and cognitive slowing, which may dissipate with time and healing. Some of the risk for recurrent concussion may be independent of concussion care, for example, genetic vulnerabilities. Lastly, some risks for repeat concussion are bio-behavioral, that is, aggressive styles of play or poor playing style—these would not get better on their own, but could conceivably improve if identified and minimized through proper coaching

and training. Those who have sustained multiple concussions are also more likely to require longer to recover, providing a second rationale to the mantra “when in doubt, sit it out”. By identifying concussions early and removing players from contact risk, the likelihood of second concussions or other injuries can be reduced.

19. Current research and mainstream medical literature confirm that a person who has suffered a moderate to severe level of traumatic brain injury may have an increased propensity for later-in-life cognitive slowing and an increased risk for early onset Alzheimer’s disease and/or dementia, Parkinson’s disease, and ALS. Mortimer et al., 1991; Bower et al., 2003; Lehman, Hein et al., 2012. Repeat concussions that occur close in time can result in a moderate or severe level of injury (second impact syndrome). However, it must be noted that although concussion is a mild traumatic brain injury, brain movement that does not reach a level that would induce a concussion (sometimes referred to as a sub-concussive event), has yet to be defined in terms of neuroscientific consequences. Therefore, a direct correlation between sub-concussive events or one or more concussive events and long-term cognitive slowing and other neurological disorders is not a certainty because of the multiple disparate premorbid risk factors and comorbidities that can contribute to neuropsychiatric problems such as apoe4 allele genotype, drug abuse, alcohol dependence and other medical problems. Repeated blows to the head that result in a general brain movement injury have been determined to produce dementia pugilistica (or punch drunk syndrome as described in boxing).

20. Over the last few years, neuropathologists have described a tauopathy in postmortem tissue of individuals who have a history of being exposed to sports or military activities that presented these individuals with an increased risk of repeated



concussions and mTBI. Termed Chronic Traumatic Encephalopathy (CTE), the neuroanatomical findings are striking. However, currently, CTE does not appear to advance in a predictable and sequential series of stages and progression of physical symptoms—although there are reports that many of the deceased patients who exhibit CTE postmortem did have neurological and neuropsychological impairments prior to their death. The current description of CTE is based on the presence or absence of tauopathy that can be seen in postmortem material. There are some experimental findings reflecting images of phosphorylated tau using positron emission tomography, though, given the absence of substantial research studies, this is not a medically/scientifically accepted method of ascertaining CTE (let alone CTE due to concussions). At present, CTE is only ascertained pathologically and postmortem.

21. Indeed, the majority of the data collected to date is retrospective in nature and restricted to a subset of subjects. Thus, the reported clinical observations (i.e., aggression, disinhibition, suicidality, etc.) are likely to be skewed by selection bias. Just as important is the state of medical and epidemiological science that has yet to systematically study the presence or absence of CTE pathology in non-concussed men and women in a reasoned effort to determine what causal inferences can appropriately be made based on a finding of CTE in decedents who were exposed to concussive events.

22. There are no published epidemiological, cross-sectional, or prospective studies relating to CTE. One of the latest reviews (Jordan BD., The Clinical spectrum of sport-related traumatic brain injury. *Nat Rev Neurol* 2013; 9:222-30) has observed that because of the lack of currently available biomarkers to observe the natural history of CTE, characterization of preclinical and prodromal CTE is premature.

23. Inferring the presence of CTE pathology from the presence of various clinical and symptomatic manifestations in living patients is, in my opinion, scientifically unsupported. Likewise, assuming that the presence of certain tau pathology in selected player patients is causally associated with, and foretells, various clinical and symptomatic manifestations and risk in those patients is, in my opinion, similarly speculative and scientifically premature. Well-controlled and prospective/longitudinal studies have not yet been conducted.

24. Alzheimer's disease is a useful point of reference. Tremendous research and thousands of clinical studies on hundreds of thousands (if not millions) of individuals over the past fifty years has been conducted, yet much uncertainty as to its causes and effects continues to exist. And it took decades of prospective studies involving such patients before the diagnostic and clinical profile of Alzheimer's was understood in the scientific community. Relatedly, it is wise to resist inferring too much from the presence or absence of particular pathology. We know from studies of Alzheimer's disease that there are those patients with Alzheimer's pathology post-mortem that were asymptomatic while alive; the reverse is likewise true, i.e., there are those with Alzheimer's symptomology while living that do not show characteristic pathology on death.

25. There are studies, which link traumatic brain injury to increased risk for dementia, as well as Parkinson's disease and amyotrophic lateral sclerosis (Mortimer et al., 1991; Bower et al., 2003; Lehman, Hein et al., 2012). Currently, the medical and scientific research organizations have not generally accepted the proposition that CTE is diagnosable in living persons. While there are a few papers recounting the use of non-scientific familial accountings of behavioral patterns pre-death as a tool to account for

post-mortem findings of levels of CTE, the peer literature has not drawn a consensus regarding the etiology of CTE, nor is there a consensus regarding a causal connection between CTE and any particular behavioral or cognitive maladies. Some researchers who have published their findings of the diagnosis of CTE on autopsy predicated upon finding tauopathy. Of course, there are a number of neurological diseases that have tauopathy as a primary finding, thereby raising issues regarding the causal connection between this finding and concussive events.

26. It has not been established scientifically that CTE is a unique neurodegenerative disease, especially the modern version of CTE put forward by the Omalu et al. and McKee et al. research groups. There are longstanding, internationally-recognized criteria for diagnosing possible Alzheimer's disease, Parkinson's disease, and ALS. In contrast to CTE, there are thousands of publications on these diseases from researchers around the world. It would be difficult to accept that CTE is an established and unique neurodegenerative disease considering the gaps in our knowledge listed below.

- a. There are no clearly defined and agreed upon neuropathological criteria for CTE. Some investigators have used the presence of tauopathy as a criteria for CTE, however this is not specific.
- b. There is no clearly defined methodology for coding and reporting the gross microscopic features that are not unique to CTE.
- c. There is no agreed upon and codified region of interest, sampling, and staining techniques for neuropathologists to use to diagnose CTE.
- d. There have been no neuropathological studies of appropriate control subjects to determine if they show any of the pathological features believed to be unique to CTE. Studies of men in their 50s and 60s who have a history of chronic depression, substance abuse, and cardiovascular disease, with no known history of neurotrauma or participation in contact sports, are urgently needed.

- e. There is no classification system for research or in the health care system, for clinical features of possible or probable CTE.
- f. There are no large clinical studies with former athletes and non-athletes to determine if a history of MTBI or repetitive non-concussive neurotrauma associated with contact sports is independently associated with depression, suicidality, irritability and emotional dyscontrol, or cognitive impairment after controlling for other factors known to be associated with these clinical symptoms.

27. The identifiable disorders and functional disabilities that the Settlement identifies as qualifying diagnoses in living players of neurocognitive impairments and other diseases/disorders (ALS, Alzheimer's disease, and Parkinson's disease), together with the plan to allow players over the next 65 years to file for a payment if and when their respective circumstances worsen, is an appropriate method to address the deficits, functional limitations, and diseases that players with these findings may experience over their lifetime.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: November 11, 2014

Los Angeles, CA



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David A. Hovda, PhD.

TAB A

Revised October 1, 2014

## DAVID ALLEN HOVDA, PhD

### CURRICULUM VITAE

#### **PERSONAL INFORMATION**

Business Address: Department of Neurosurgery  
David Geffen School of Medicine at UCLA  
10833 Le Conte Avenue, Room 18-228A  
Box 957039  
Los Angeles, California, 90095-7039

Phone Numbers: Laboratory (310) 825-8646  
Office (310) 206-3480  
FAX (Laboratory) (310) 206-3732  
FAX (Office) (310) 794-2147

E-Mail Address: dhovda@mednet.ucla.edu

Birth Date: June 6, 1953

Birth Place: Tomah, Wisconsin, USA

Marital Status: Married July 7, 1979 (Cydney C. Stewart, MD)

#### **EDUCATION:**

1979 BA, Psychology, University of New Mexico, Albuquerque, NM

1982 MS, Psychobiology, University of New Mexico, Albuquerque, NM

1985 PhD, Psychobiology, University of New Mexico, Albuquerque, NM

1987 Postdoctoral Degree, Neurophysiology, Mental Retardation Research Center,  
Neuropsychiatric Institute, UCLA, Los Angeles, CA

#### **PROFESSIONAL EXPERIENCE:**

1978 - 1985 Research Assistant, Laboratory of Dr. Dennis M. Feeney, Department of Psychology,  
University of New Mexico, Albuquerque, NM

1980 - 1984 Coordinator of Freshman Experimental Psychology Laboratories, Department of  
Psychology, University of New Mexico, Albuquerque, NM

1985 - 1987 Postdoctoral Fellow, Laboratory of Dr. Jaime R. Villablanca, Mental Retardation  
Research Center, Department of Psychiatry and Neurobehavioral Science, School of  
Medicine, UCLA, Los Angeles, CA

1987 - 1989 Assistant Researcher, Laboratories of Drs. Jaime R. Villablanca and Harry T.  
Chugani, School of Medicine, UCLA, Los Angeles, CA

1989 - Present Director of the Neurotrauma Laboratory, Department of Neurosurgery, David Geffen  
School of Medicine at UCLA, Los Angeles, CA

1989 - 1994 Assistant Professor – In Residence, Department of Surgery, Division of

David A. Hovda, PhD

Neurosurgery, School of Medicine, UCLA, Los Angeles, CA

1990 - Present Member of the Brain Research Institute, UCLA, Los Angeles, CA

1992 - Present Director of Brain Injury Research Center, Department of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

1994 - 2000 Associate Professor, Department of Surgery, Division of Neurosurgery, UCLA School of Medicine, Los Angeles, CA

1994 - 2000 Associate Professor, Department of Molecular and Medical Pharmacology, UCLA School of Medicine, Los Angeles, CA

2000 – Present Professor, Department of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

2000 – Present Professor, Department of Molecular and Medical Pharmacology, David Geffen School of Medicine at UCLA, Los Angeles, CA

2003 – 2008 Vice-Chief of Research, Division of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

2008 – Present Vice-Chair of Research, Department of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

2014 – Present Vice-Chair of Academic Affairs, Department of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, CA

#### **ADMINISTRATIVE EXPERIENCE**

**Director, UCLA Brain Injury Research Center (1992 – Present)** - Over the course of my tenure as Director, I have managed a \$5 million per year budget, overseeing traumatic brain injury research from as many as 25 faculty from 8 different departments throughout the University. In addition to monitoring performance issues, overseeing the allocation of space, recruiting new faculty and coordinating grant applications, I have been heavily involved in public relations. During my tenure, I have launched the University of California Neurotrauma Research Program that actively funds research proposals from all University of California campuses. In addition, I have launched a series of workshops related to neuroscientific techniques, providing funds for equipment and renovation of space in several laboratories throughout the University of California. This UC Neurotrauma program has also been responsible for managing the annual University of California Neurotrauma Meeting. Every year, it has been my responsibility to set the venue, assign the lectures and provide the funding for this event. This meeting consists of a three-day symposium that features the best in neuroscience research throughout the University of California as it is related to traumatic brain injury and recovery of function. Finally, I have been actively involved in fund raising acquiring support from individuals, corporations and sports organizations. Over the years, this has resulted in several million dollars provided to the Brain Injury Research Center to support both research and teaching activities.

**Vice Chair of Research, Department of Neurosurgery, David Geffen School of Medicine at UCLA, Los Angeles, California (2003 – Present)** - Serving at the pleasure of the Department Chair (Dr. Neil Martin), I am responsible for overseeing all neuroscience research for the Department of Neurosurgery. This includes, but not limited to, the supervision of research training for the residents, supporting the applications of grants, reviewing manuscripts prior to submission for publication and coordinating the general neuroscientific education of the faculty and residents.

**Chair, National Institutes of Health Study Section NSD-A (2001 – 2003), Brain Injury and Neurovascular Pathologies (2005 – 2008), Multi-Drug Combinations to Promote Neurological Recovery in Traumatic Brain Injury (2009) for NINDS** - I was responsible for

David A. Hovda, PhD

review and oversight of Program Project, Training, R01, R21, Conference and Center grant applications. Meetings were held three times each year, during which it was my responsibility to resolve differences of opinions regarding scientific merit and methodology, helping to bring the Committee to a consensus of opinion in terms of recommendation for level of enthusiasm. In addition, it was my responsibility to confront reviewers whose comments to the individual investigators did not match the scores they submitted to the Committee, thereby bringing into alignment their communication to the applicant with the final score calculated in terms of enthusiasm. Finally, I dealt with several issues raised by investigators and reviewers related to conflict of interest, intellectual property and scientific misconduct.

**Chairman, UCLA Chancellor's Committee for Animal Research (1991 - 2001)** - Along with chairing meetings twice a month, I was responsible for recruiting faculty and outside members. In addition, I was responsible for all correspondence from the Committee to investigators regarding their protocols, alleged infractions, inspection and certifications. Meeting regularly with the Vice Chancellor for Research, I lobbied for resources and initiated changes related to maintaining Association for the Assessment and Accreditation of Laboratory Animal Care (AAALAC). Finally, it was my responsibility to help resolve conflicts between the Department of Laboratory Animal Medicine and individual faculty members through coordinating meetings with the Chief Veterinarian of UCLA.

### **TEACHING EXPERIENCE**

1980 - 1984	Teaching Assistant & Introductory Lab Coordinator, Department of Psychology, University of New Mexico, Albuquerque, NM
1982 - 1983	Teaching Assistant, Gross Anatomy, Department of Anatomy, School of Medicine, University of New Mexico, Albuquerque, NM
1983	Teaching Assistant, Integrative Neurophysiology, Departments of Physiology and Psychology, University of New Mexico, Albuquerque, NM
1984	Teaching Assistant, Psychobiology of Motivation, Department of Psychology, University of New Mexico, Albuquerque, NM
1985 - 1989	Teaching Assistant, Basic Neurology Course, School of Medicine, UCLA, Los Angeles, CA
1992 - 2007	Gross Anatomy 102, David Geffen School of Medicine at UCLA, Los Angeles, CA
1993 - 1994	Course Co-Coordinator Gross Anatomy 102, Department of Anatomy, UCLA School of Medicine, Los Angeles, CA
1997 - 1999	Biomed 218, Gross Anatomy, UCLA School of Medicine, Los Angeles, CA
1998 - 2000	Pharmacology 234B, Laboratory Techniques, David Geffen School of Medicine at UCLA, Los Angeles, CA
1998 - 2000	Neuroscience 211, Neuroimaging, UCLA School of Medicine, Los Angeles, CA
1998 - Present	Neuroscience 207, Integrity of Scientific Investigation, Education, Research, and Career Implications, David Geffen School of Medicine at UCLA, Los Angeles, CA
2013 - Present	Neuroscience 250, Seminar in Neural Development, Degeneration and Repair

**PSYCHOLOGY:** My teaching experience also includes: Introduction to Psychology, Physiological Psychology, Psychopharmacology and Psychobiology of Motivation. Additionally, I have taught upper division lab sections for students interested in the Neurosciences. The topics I have taught include: neurosurgery (stereotaxic and general), electrophysiology, histology, behavioral analysis, statistical analysis and computer science.



David A. Hovda, PhD

**ANATOMY:** I have taught gross anatomy, including neuroanatomy.

**PHYSIOLOGY:** I have taught, and am currently teaching, neurophysiology to graduate and medical students interested in neuroscience covering such areas as sensory/motor systems, recovery of function, vision, pain and sleep.

#### **Neurosurgical Residents Trained (Current Positions)**

Benham Badie, M.D.; Department of Neurological Surgery, City of Hope, Duarte, CA  
 Monica Wehby, M.D.; Pediatric Neurosurgeon, Legacy Health, Portland, OR  
 Martin Holland, M.D.; Director & Chief, Department of Neurosurgery, Trinity Mother Frances  
 Neuroscience Institute, Tyler, TX  
 P. David Adelson, M.D.; Director, Phoenix Children's Neuroscience Institute, Phoenix, AZ  
 Curtis E. Doberstein, M.D.; Assistant Professor of Neurosurgery, Brown University, Providence, RI  
 David Tandian, M.D.; Neurosurgeon in Indonesia  
 Igor Fineman, M.D.; Huntington Memorial Hospital, Pasadena, CA  
 Aman Patel, M.D.; Departments of Neurosurgery and Radiology, Mt. Sinai Hospital, New York, NY  
 Andrew Cannestra, M.D, Ph.D.; Lysterly Neurosurgery, Jacksonville, FL  
 Joshua Dusick, M.D.; David Geffen School of Medicine at UCLA

#### **Postdoctoral Fellows Trained**

Kenneth D. Steinsapir, MD; 1995, Cosmetic, Facial, & Ophthalmic Plastic Surgery, Diplomate,  
 American Board of Ophthalmology, Jules Stein Eye Institute, UCLA  
 Stefan M. Lee, PhD, 1996, Associate Professor of Neurosurgery, University of Southern California  
 Dorothy A. Kozlowski, PhD; 1997, Assistant Professor of Research, Department of Biological  
 Sciences, DePaul University  
 Mayumi L. Prins, PhD; 1998, Associate Professor, Department of Neurosurgery, UCLA  
 Amir Samii, MD; Professor & Vice Director, Dept of Neurosurgery, International Neuroscience  
 Institute, Hannover, Germany  
 Christopher Giza, MD; Associate Professor, Department of Neurosurgery, UCLA  
 Takeshi Maeda, MD, PhD: Associate Professor, Nihon University, Tokyo, Japan  
 Naoki Aoyama, MD, PhD: Assistant Professor, Nihon University, Tokyo, Japan  
 Tatsuro Kawamata, MD, PhD; Associate Professor of Neurosurgery, Nihon University, Tokyo, Japan  
 Haruhiko Ogawa, MD, PhD; Private practice, Tokyo, Japan  
 Atsuo Yoshino, MD, PhD; Associate Professor, Nihon University, Tokyo, Japan  
 Elisa Roncati-Zanier, MD; Ospedale Maggiore Policlinico IRCCS (Neurocritical Care Unit), Milan, Italy  
 Brenda Bartnik, PhD; Assistant Professor, Loma Linda University, Loma Linda, California  
 Masamichi Fukushima, MD; Associate Professor, Nihon University, Tokyo, Japan  
 Nobuhiro Moro, MD, PhD; Nihon University, Tokyo, Japan  
 Ying Bryant, PhD; Walter Reed Army Institute of Research, Silver Springs, Maryland  
 Katsunori Shijo, MD, PhD; Nihon University, Tokyo, Japan  
 Tiffany Greco, PhD University of Maryland (In Training)  
 Nobuo Kutsuna, MD, PhD; Nihon University, Tokyo, Japan (In Training)

#### **Graduate Students Trained**

Mayumi L. Prins; PhD; Graduated 1997, Associate Professor, Dept of Neurosurgery, UCLA  
 Amy Moore; PhD; Graduated 1999, Assistant Professor, Santa Clara University  
 Cheri Osteen, PhD; Graduated 2002, Science Medical Writer, Amgen, Thousand Oaks, CA  
 Emily (Shieh) Ip, PhD; Graduated 2002, Scientist, Pre-Clinical Project Management, Anacor  
 Pharmaceuticals, CA

David A. Hovda, PhD

Gene Gurkoff, PhD; Graduated 2006, Assistant Professional Researcher, Dept of Neurological Surgery, UC Davis

Maxine Reger, PhD; Graduated 2011, Postdoctoral Fellow, National Institutes of Health/NIAAA

Naomi Santa Maria, Graduated 2012, Postdoctoral Fellow, Cal Tech

### **Medical Students Trained**

Igor Fineman; Huntington Memorial Hospital, Pasadena, CA

Amir Samii; Professor & Vice Director, Dept of Neurosurgery, International Neuroscience Institute, Hannover, Germany

Bahman Badie; Department of Neurological Surgery, City of Hope, Duarte, CA

Deidre Fisher; Northside Hospital, Atlanta, GA

Karin Fu; Department of Radiation Oncology, UC San Francisco, CA

### **UNIVERSITY COMMITTEE ASSIGNMENTS**

Graduate Training Committee for the Department of Molecular and Medical Pharmacology

Eastside Master Planning Committee on the Vivarium (Co-Chair)

Specialty Training and Advanced Research (STAR) Committee

Master Plan II Vivarium Planning Committee

Committee for Evaluation of a Neuroscience Graduate Students Progress

School of Medicine Space Committee

Space Committee for the Brain Research Institute

Veterinarian Search Committee

Committee for Esprit de Corps for the Brain Research Institute

Interdepartmental Neuroscience Program's Advising Committee

Committee for the UCLA Medical School's "Frontiers in Science" (Program, 1991)

Chancellor's Committee for Animal Research (Chairman) (1991 – 2001)

Appointments and Promotions Committee for the Department of Surgery (2002 – 2010)

Council on Academic Personnel, Ad Hoc Review Committee (2003)

Selection Committee for the John H. Walsh Young Investigator Research Prize (2004 – Present)

Academic Senate Committee on Committees (2005 – 2007)

Working Group on Threats to Research (2009 – Present)

UCLA Council on Academic Personnel (2010 – 2014)

University of California Council on Academic Personnel (2011 – 2012)

Operations Sub-Committee: Clinical Operations, Operation Mend (2012 – Present)

Integrated Center for Neural Repair Steering Committee (2012 – Present)

UCLA Human Pluripotent Stem Cell Research Oversight (hPSCRO) Committee (2012 – Present)

UCLA Council on Academic Personnel (Chair) (2013 – 2014)

UCLA Neuroscience Planning Committee (2014 – Present)

Graduate Student Committee for Doctoral Candidacy:

Bioengineering

Ms. Naomi Santa Maria (2012)

Integrative Biology and Physiology

Ms. Cheri Osteen (2002)

Ms. Shoshanna Vaynman (2005)

Molecular and Medical Pharmacology

Ms. Lorraine Hanssen (2002)

Mr. Dennis Harvey (2003)

David A. Hovda, PhD

Ms. Amy Shu-Jung Yu (2011)  
Neurobiology:  
Ms. Mayumi Prins (1997)  
Ms. Dorothy Harris (2007)  
Neuroscience:  
Mr. Mike De Rosa (1992)  
Ms. Gina R. Poe (1993)  
Mr. Douglas Nitz (1993)  
Ms. Anne Blood (1994)  
Ms. Amy Moore (1999)  
Ms. Emily Shieh (2002)  
Mr. Sameer Sheth, (2003)  
Mr. Jeff Gotts (2003)  
Mr. Erh-Fang Lee (2007)  
Mr. Che Hutson (2009)  
Dr. Jason S. Hauptman (2011)  
Mr. Jaehoon Choe (2014)  
Ms. Daya Alexander (In Training)  
Mr. Derek Verley (In Training)  
Nursing:  
Ms. Norma McNair (2012)  
Psychology:  
Ms. Stacey L. Young (1993)  
Mr. Alan S. Keys (1994)  
Ms. Aimee Hunter (2001)  
Mr. Michael Rowe (2002)  
Ms. Maxine Reger (2011)

### ***PROFESSIONAL ACTIVITIES:***

#### **Positions in National and International Societies**

1999 – 2002	Councilor for the National Neurotrauma Society
1995 - 1996	Vice President, National Neurotrauma Society
1996 - 1997	President, National Neurotrauma Society
2001 – 2002	Co-Chairperson, Women in Neurotrauma Research
2004 – Present	Councilor, National Neurotrauma Society
2006 – 2010	Secretary, International Neurotrauma Society
2007 – 2009	President-Elect, International Neurotrauma Society
2008 – 2009	President, National Neurotrauma Society
2009 – 2011	President, International Neurotrauma Society

#### **Memberships in Academic Societies**

Society for Neuroscience  
American Association for the Advancement of Science  
The Scientific Research Society of Sigma Xi  
British Brain Research Association  
European Brain and Behavior Society  
International Brain Research Organization  
The National Neurotrauma Society

The Society of Cerebral Blood Flow and Metabolism  
The International Neurotrauma Society

### **National and International Committee Assignments**

External Advisory Committee: Program Project, Kansas Center for Mental Retardation and Human Development, The University of Kansas Medical Center (1992 – 1999)

External Advisory Committee: Program Project, Division of Neurosurgery, University of Pennsylvania (1993-1999)

National Neurotrauma Society Nominating Committee (1993)

International Advisory Committee for the International Neurotrauma Society (1994)

National Neurotrauma Society Abstract Selection Committee Chairman (1996)

Kentucky Spinal Cord and Head Injury Research Board (1997 – Present)

Reviewer for the State of Kentucky Neurotrauma Research Initiative (1999 – Present)

1<sup>st</sup> Joint Symposium of the National & International Neurotrauma Societies Program Committee (2001 – 2004)

National Neurotrauma Society: 2003 NNTS Meeting Program Committee (2002 – 2003)

Brain Injury Association of America: Blue Ribbon Panel Review of Brain Injury Risk of Amusement Park Rides (2002)

Defense and Veterans Brain Injury Center: Member, Scientific Advisory Board (2004 – Present)

International Scientific Advisory Board – Uppsala University, Uppsala, Sweden (2005 – Present)

Brain and Spinal Injury Center: Scientific Advisor, ICP 2007 (2006 – Present)

Brain Injury Association of California, Board of Directors (2006 – 2013)

Department of Defense, Defense Health Board, Traumatic Brain Injury: External Advisory Subcommittee (2008 – 2011)

Department of Defense Post-Traumatic Stress Disorder and Traumatic Brain Injury Clinical Consortium (INTRuST): Scientific Advisory Board (2008 – Present)

Brain Injury Association of America Board of Directors (2009 – Present)

Department of Defense, Defense Health Board (2011 – Present)

University of Maryland External Advisory Committee (2011 – Present)

Department of Defense, U.S. Army Medical Research and Materiel Command, Combat Casualty Care Research Program, Neurotrauma Steering Committee (2012 – Present)

National Academy of Neuropsychology Foundation, Board of Trustees (2013 – Present)

Cohen Veterans Center, Advisory Board (2013 – Present)

UNM Alumni Association Board of Directors (2013 – Present)

Pediatric Neurocritical Care Research Group (2013 – Present)

### **NATIONAL INSTITUTES OF HEALTH COMMITTEE ASSIGNMENTS**

NINDS Neurological Disorders (Stroke & Trauma) Site Visit Team (1991)

NINDS Neurological Disorders (Stroke & Trauma) Site Visit Team (1991)

NINDS Neurological Disorders (Stroke & Trauma) Site Visit Team (1993)

NINDS Neurological Disorders (Stroke & Trauma) Ad Hoc (1996)

NINDS Neurological Disorders (Stroke & Trauma), Neurological Sciences and Disorders A (NSD-A) Committee Member (1998 – 2003); Chairman (2001 – 2003)

NINDS Neurological Disorders (Stroke & Trauma) Reverse Site Visit Team (2001)

National Institute of Child Health and Human Development, National Center for Medical Rehabilitation Research, Cooperative Multicenter TBI Clinical Trials Network, Advisory Board Member (2002 – Present)

TBI Clinical Trials Network, Steering Committee Member (2004 – Present)

David A. Hovda, PhD

Brain Disorders and Clinical Neuroscience (BDCN), Committee Member (2005 – 2008)  
Brain Injury and Neurovascular Pathologies (BINP), Committee Member (2006 – 2011); Chairman  
(2006 – 2008)  
Multi-Drug Combinations to Promote Neurological Recovery in Traumatic Brain Injury, Chairman  
(2009)  
Eunice Kennedy Shriver National Institute of Child Health and Human Development, Chairman (April,  
2009)  
RC4 Editorial Board Reviewer (2010)

### ***EDITORIAL MEMBERSHIP***

Restorative Neurology and Neuroscience, Elsevier  
Developmental Brain Dysfunction, S. Karger AG  
Journal of Neurotrauma, Mary Ann Liebert  
Developmental Neurorehabilitation, Informa Healthcare  
Eye and Brain, Dove Medical Press  
Experimental Neurology, Elsevier

### ***SCIENTIFIC REVIEWS***

#### **Journals:**

<u>Brain Research</u>	<u>Journal of Pediatrics</u>
<u>Journal of Neurotrauma</u>	<u>Brain Research Bulletin</u>
<u>Restorative Neurology &amp; Neuroscience</u>	<u>Journal of Neurosurgery</u>
<u>Psychological Review</u>	<u>Developmental Brain Dysfunction</u>
<u>Life Sciences</u>	<u>Journal of Applied Physiology</u>
<u>Journal of Neuroscience</u>	<u>Journal of Physiology</u>
<u>Experimental Neurology</u>	<u>Pharmacology Biochemistry &amp; Behavior</u>
<u>Journal of Cerebral Blood Flow &amp; Metabolism</u>	<u>Neuroscience</u>
<u>NeuroImage</u>	<u>Journal of the Institute for Laboratory Animal Research</u>
<u>Proceedings of the National Academy of Science</u>	<u>Critical Care Medicine</u>
<u>Neurology</u>	<u>NS Drugs</u>
<u>Journal of Neuroscience Research</u>	<u>Regional Immunology</u>
<u>Surgical Neurology</u>	<u>Journal of Neurochemistry</u>
<u>Current Pharmaceutical Design</u>	<u>European Journal of Neuroscience</u>
<u>Brain Pathology</u>	<u>Journal of Alzheimer Disease Assoc. Disorders</u>
<u>Behavioural Brain Research</u>	<u>Journal of Neuroimaging</u>
<u>Annals of Neurology</u>	<u>Neuroscience &amp; Biobehavioral Reviews</u>
<u>Archives of Physical Medicine And Rehabilitation</u>	<u>Developmental Neuroscience</u>
<u>Molecular and Cellular Biochemistry</u>	<u>Acta Neurochirurgica</u>
<u>Neuroscience Letters</u>	<u>Journal of Neuroscience Methods</u>
<u>Brain</u>	<u>Surgical Neurology International</u>
<u>Nature Reviews Neuroscience</u>	<u>Molecular and Cellular Biochemistry</u>
	<u>New England Journal of Medicine</u>

#### **Books:**

Neural Transplantation and Regeneration, G. D. Das and R. B. Wallace (eds.), Journal of

Electrophysiological Techniques, 1986

Trauma Section, Youmans Textbook of Neurosurgery (6<sup>th</sup> Edition), Elsevier Publishers, 2010

### **CONSULTATION AND ADVISORY SERVICES**

Knoll AG, CNS-Research, Knollstrasse, Ludwigshafen, Germany, December 10, 1991

NEUREX Corporation, Brain Injury Research, Menlo Park, California, March 4, 1992

Astra Corporation, Traumatic Brain Injury Symposium, Anaheim, California, February 9-10, 1997

Neurocrine Biosciences, San Diego, California, 1997-1998

National Football League, New York, NY, August 14-17, 1998

National Football League, Phoenix, AZ, August 24-25, 1998

World Boxing Council, 1989 – Present

Perot Family Center for Brain and Nerve Injuries at Children's Medical Center (External Advisory Board), Dallas, Texas, 2003 – Present

New Jersey Commission on Brain Injury Research (New Jersey Department of Health), Trenton, New Jersey, 2006 – Present

Innogene Kalbiotech Pte. Ltd., Jakarta 13210, Indonesia 2006 – 2008

Medical Advisory Board, Sports Legacy Institute, Waltham, MA, 2008 – 2011

Injury and Traumatic Stress Consortium (INTRuST), Scientific Advisory Committee, 2008 – Present

US Department of Defense, TBI/PTSD Advisory Panel, 2009 – Present

State of California, Senate Health Committee Hearing, January 13, 2010

Neural Analytics, Advisory Board (2013 – Present)

### **Granting Agencies:**

American Institute of Biological Sciences (AIBS), 1999

Department of Veterans Affairs, 1999

Kentucky Spinal Cord and Head Injury Research Board

The Wellcome Trust, London, England

The American Heart Foundation

UCLA Stein/Oppenheimer Foundation

Mission Connect

US MEXUS-CONACYT

Uniformed Services University of the Health Sciences

National Institutes of Health: National Institute of Neurological Disorders and Stroke

Scientific Peer Advisory and Review Services (US Army Medical Research and Material Command, Department of Defense Congressionally Directed Medical Research Program/TBI)

Centers for Disease Control and Prevention, Coordinating Center for Environmental Health/ATSDR and Injury Prevention

Program Merit Review Committee, Norman Hackerman Advanced Research Program (State of Texas)

2013 Oppenheimer Program

### **HONORS**

1985 Benjamin Franklin Haught Memorial Award

1985 - 1987 National Institutes of Health Postdoctoral Traineeship

1987 Giannini Foundation Postdoctoral Scholar Award

1991 The National Head Injury Foundation Young Investigator Award



David A. Hovda, PhD

1992	Lind Lawrence Eminent Scholar
2006	Women in Neurotrauma Research for Support of Students
2009	Sarah Jane Brain Foundation David Hovda Angel Award
2011	Strength of the Nation Award (US Army)
2012	University of New Mexico Alumni Association's James Zimmerman Award
2014	2014 National Training Center Award (Ft. Irwin, CA)
2014	Keynote Speaker, Graduate Commencement Ceremony, University of New Mexico

**NAMED LECTURES**

2008	1 <sup>st</sup> Annual Deborah L Warden Lectureship
2011	1 <sup>st</sup> Annual Mark P. Clio MD Lectureship

**RESEARCH INTERESTS**

Incorporating both basic and clinical neuroscience, my interests are primarily in the areas of neuroplasticity and recovery of function after brain injury. Specifically, my research activity has dealt with the following areas: (1) Recovery of function after brain injury; (2) Electro-physiological characteristics of the injured brain; (3) The biochemical and morphological analysis of the brain in response to injury; (4) Neurotransplantation; (5) Metabolic changes after brain injury; and (6) Effects of brain injury upon development.

**RESEARCH AWARDS GRANTED**

Program Director, UCLA Brain Injury Research Center University of California, Office of the President Permanent augmentation of support awarded in perpetuity State of California, 1999 – Present	\$ 5,000,000*/ per year
*Reduced to \$2,200,000 in 2005 due to State Budget Cuts	

Investigator "UCLA Program in Memory Restoration" Department of Defense, DARPA-14-08-RAM-PA-010 (PI – Fried) 09/01/14 – 08/31/18	\$ 3,877,959/year
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Program Director/Principal Investigator "TBI-Induced Cerebral Metabolic Depression and Recovery" National Institutes of Health, 1 P01 NS 058489 04/01/09 – 03/31/14	\$ 1,348,087/year
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Principal Investigator, "Using glutamatergic pharmacotherapy to optimize TBI recovery" National Institutes of Health, 1 R01 NS27544 07/01/13 – 06/30/18	\$ 218,750/year
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Mentor, "UCLA Neurosurgery Research Education Program" National Institutes of Health, 1 R25 NS079198	
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David A. Hovda, PhD

07/01/12 – 06/30/17 \$ 91,642/year

Investigator, "Propylene Glycol after Traumatic Brain Injury (TBI):  
Biomarker of Altered Brain Metabolism"

National Institutes of Health, 1 R21 NS057252-01A1 (PI – Glenn)  
04/01/08 – 03/31/10 \$ 150,000/year

Principal Investigator, "Loss of Developmental Plasticity after Head Injury"

National Institutes of Health, 1 R01 NS27544  
01/19/06 – 12/31/09 \$ 309,000

Investigator, "Axon Plasticity and Recovery of Function after  
Traumatic Brain Injury"

National Institutes of Health, 1 R01 NS055910-01A1 (PI – Harris)  
06/01/07 – 05/31/11 \$ 304,171

Investigator, MRS Detects Metabolic Dysfunction After Brain Injury

National Institutes of Health, R01 NS 49471 (PI – Vespa)  
01/01/06 – 12/31/09 \$ 248,000

Investigator, Age-Dependent Ketone Metabolism After Brain Injury

National Institutes of Health, 1 R01 NS052406 (PI – Prins)  
7/1/05 – 6/30/08 \$ 250,097

Investigator, Voluntary Exercise Therapy after Traumatic Brain Injury

National Institutes of Health, 1 R21 NS48535 (PI – Griesbach)  
4/1/05 – 1/31/07 \$ 392,663

Collaborator, In Vivo Imaging of Post-Traumatic Cerebral Amyloid Deposition

National Institutes of Health  
R21 (Bergsneider)

Investigator, NCRR Shared Instrument Grant entitled "Research Animal  
Magnetic Resonance Imaging Instrument"

NIH RR13065, 5/15/99 – 5/14/00 \$ 400,000

Sponsor, The Role of Endothelin in Experimental Brain Hemorrhage:

Influence on Blood Flow and Metabolism, Tom Glenn. 1173-F11,  
American Heart Association, 7/1/98 - 6/30/00 \$ 25,600

Principal Investigator, Project III, Traumatic Brain Injury Induced Cellular  
Vulnerability: Relationship Between Cerebral Blood Flow and Metabolism.

Program Project entitled: "The Neurometabolic Pathobiology of Traumatic  
Brain Injury", Program Project Director, Donald P. Becker, NS30308-6  
National Institute of Health, 7/1/97 - 6/30/04 \$1,088,045

Co-Program Director, Program Project entitled: "The Neurometabolic

Pathobiology of Traumatic Brain Injury", Program Project Director,  
Donald P. Becker, MD, NS30308-06A2, National Institutes of Health,



David A. Hovda, PhD

7/1/98-6/30/04.	\$3,748,094
Investigator, Delayed Cell Death Following Traumatic Brain Injury.	
Principal Investigator, Stefan M. Lee, Ph.D.	
NIH R29 NS37363-01, 12/01/98 - 11/30/01	\$ 498,143
Principal Investigator, The 15 <sup>th</sup> Annual National Neurotrauma Symposium,	
NIH 1-R13-NS37076-1, 9/15/97 - 8/31/98	\$ 15,000
Principal Investigator, Excitotoxic and Neuronal Dysfunction in Brain Injury,	
NIH RO1-NS27544, 9/1/96 - 8/31/99	\$ 534,251
Principal Investigator, Omega-Conopeptides Reduces the Ionic and Metabolic	
Dysfunction Following Fluid Percussion Brain Injury In Rat,	
NEUREX Corp., 1992-1994	\$ 40,000
National Institutes of Health Training Grant (# HD07416)	
Program Director: Dr. Bruce Dobkin, 9/30/91 - 9/29/96	\$ 656,907
Principal Investigator, Calcium Accumulation Following Traumatic Brain	
Injury. Brain Trauma Foundation, 7/1/91 - 6/31/92	\$ 50,000
Principal Investigator, Metabolic Dysfunction Following Fluid Percussion	
Brain Injury in Rat. Project in a center grant entitled "UCLA Head	
Injury Research Center". Program Director, Donald P. Becker. NIH	
NS30308, 1/1/92 - 12/31/96	\$ 353,224
Principal Investigator, Vulnerability in Brain Injury: Thresholds for Recovery.	
Project in a center grant entitled "UCLA Head Injury Research Center".	
Program Director, Donald P. Becker. Depart. Health and Human Services,	
Public Health Service, NS30308, 1/1/92 - 12/31/96	\$ 558,057
Co-Principal Investigator, Excitotoxic Ionic Fluxes and Neuronal	
Dysfunction in Traumatic Brain Injury, NIH 5 RO1 NS27544,	
4/1/90 - 3/31/93	\$ 382,553
Co-investigator, Biochemical Analysis of Traumatic Brain Injury using	
Microdialysis Probes, Research and Education Institute, Inc.	
Harbor-UCLA Medical Center, 9/1/90 - 8/31/91	\$ 3,000
Co-Principal Investigator, Brain Injury and Recovery of Function	
Lind Lawrence Foundation, 10/8/90 - Present	\$ 125,000/yr
Co-Principal Investigator, Recovery of Function After Brain Injury	
Annie Laurie Aitken Charitable Trust, 6/1/90 - 5/31/92	\$ 188,100
Principal Investigator, Measurement of Cerebral Calcium Following	
Brain Injury in the Rat. Committee on Research: UCLA 7/1/89 - 6/30/90	\$ 1,900

David A. Hovda, PhD

Co-investigator of a supplement to a program project, entitled, "Neuroscience Research With PET", Dr. Michael E. Phelps, P.I. NIH P01 NS15654, 5/1/88 - 8/31/89	\$ 315,603
Principal Investigator, Neonatal Cerebral Hemispherectomy and Visual Field Impairments. The Giannini Foundation, 1987 - 1988	\$ 17,000
Principal Investigator, Neonatal Hemispherectomy and Integrity of the Visual Fields. Neuropsychiatric Institute Biomedical Research Support Grant 10/31/86 - 10/31/87	\$ 4,016
Principal Investigator, Anatomical Brain Reorganization in Cats with Neonatal or Adult Hemispherectomy. Neuropsychiatric Institute Biomedical Research Support Grant 10/31/85 - 10/31/86	\$ 4,463

**LECTURES AND PRESENTATIONS:**

1. Feeney DM, Gonzalez A, Law WA, **Hovda DA**. Amphetamine, haloperidol and experience affect rate of recovery after motor cortex injury. 13th International congress of Neuropsychopharmacology, 1982, Jerusalem, Israel.
2. Feeney DM, Boyeson MG, **Hovda DA**, Salo AA. Catecholamines affect recovery from brain injury. 5<sup>th</sup> International Catecholamine Symposium, 1983, Goteborg, Sweden.
3. Sutton RL, Dail WG, **Hovda DA**, Feeney DM. Chromaffin cell autografts in cats with cortical injury, VA/PVA International Symposium on Neural Regeneration, The Asilomar Conference Center, Pacific Grove, California, December 8-12, 1985.
4. Villablanca JR, Shook BL, **Hovda DA**. Fetal neocortex transplant into degenerating kitten thalamus. Schmitt Neurological Sciences Symposium, 1987, Rochester, New York.
5. Villablanca JR, Hovda **DA**. Sparing from neuronal degeneration matches recovery of function in neonatal versus adult cerebral hemispherectomized cats. OASI Institute for Research and Prevention of Mental Retardation and Aging, 1988, Troina, Italy.
6. **Hovda DA**, Kawamata T, Yoshino A., Katayama Y, Becker DP. Administration of excitatory amino acid antagonists via microdialysis prevents the increase in glucose utilization seen after concussive brain injury. Excitatory Amino Acid Receptors in the Brain; Functions and Disorders, 1990, Montreal, Canada.
7. Kawamata T, Katayama Y, Yoshino A., **Hovda DA**, Becker DP. Administration of kynurenic acid via microdialysis prevents the increase in glucose utilization seen immediately following traumatic brain injury. American Association of Neurological Surgeons, 1990, Nashville, TN.
8. **Hovda DA**, Yoshino A, Kawamata T, Katayama Y, Becker DP. Dynamic changes in local cerebral glucose utilization following fluid percussion injury: Evidence of a hyper- and subsequent hypometabolic state. American Association of Neurological Surgeons, 1990, Nashville, TN.
9. Kawamata T, Katayama Y, **Hovda DA**, Yoshino A., Becker DP. Administration of kynurenic acid

David A. Hovda, PhD

via microdialysis attenuates lactate accumulation following concussive brain injury in rats. Neurotrauma Society Meeting, 1990.

10. Yoshino A, **Hovda DA**, Katayama Y, Kawamata T, Becker DP. Hippocampal CA3 lesion prevents the post-concussive increase in glucose metabolism in CA1. Neurotrauma Society Meeting, 1990.
11. Smith M, Fineman I, **Hovda DA**, Kawamata T, Yoshino A, Becker DP. Intracellular calcium accumulates for at least 48 hours following fluid percussion brain injury in the rat. Neurotrauma Society Meeting, 1990.
12. Tandian D, Romhanyi RS, **Hovda DA**, Yoshino A, Kawamata T, Balady NF, Becker DP. Amphetamine enhances both behavioral and metabolic recovery following fluid percussion brain injury. Neurotrauma Society Meeting, 1990.
13. Romhanyi RS, Tandian D, **Hovda DA**, Kawamata T, Yoshino A, Cristescu SV, Becker DP. Catecholaminergic stimulation enhances recovery of function following concussive brain injury. Neurotrauma Society Meeting, 1990.
14. Becker DP, Hovda **DA**. Concussive Unconsciousness: or "When can a football player who has been knocked out return to competition". 36th Annual Western Neurosurgical Society Meeting, 1990, Honolulu, HI.
15. **Hovda DA**, Yoshino A, Fineman I, Smith M, Becker DP. Intracellular calcium accumulates for at least 48 hours following fluid percussion brain injury in rat. American Association of Neurological Surgeons, 1991, New Orleans, LA.
16. Yoshino A, **Hovda DA**, Katayama Y, Kawamata T, Becker DP. Hippocampal CA3 lesion prevents the post-concussive metabolic derangement in CA1. American Association of Neurological Surgeons, 1991, New Orleans, LA.
17. Romhanyi RS, **Hovda DA**, Tandian D, Becker DP. Diffuse and prolonged inhibition of protein synthesis following fluid percussion injury: In vivo measurements using [<sup>14</sup>C]leucine autoradiography. American Association of Neurological Surgeons, 1991, New Orleans, LA.
18. Kawamata T, Katayama Y, **Hovda DA**, Yoshino A, Becker DP. Post-traumatic lactate accumulation is a result of ionic fluxes via excitatory amino acid activated channels. American Association of Neurological Surgeons, 1991, New Orleans, LA.
19. **Hovda DA**, Katayama Y, Yoshino A, Kawamata T, Becker DP. Metabolic derangement following concussive brain injury. First International Neurotrauma Meeting, May 14-17, 1991, Fukushima, Japan.
20. Adelson PD, **Hovda DA**, Villablanca JR, Tatsukawa K. Sparing of visual fields after neonatal cerebral hemispherectomy: Reorganization of the cortical-tectal pathway. Congress of Neurological Surgeons (1991).
21. Brown D, Chen S, Tatsukawa K, Nassir Y, **Hovda DA**, Villablanca J, Chugani H. Muscarinic cholinergic receptor binding following neonatal or adult hemispherectomy in the cat. American Epilepsy Society (1991).

22. Loopuijt LD, Ebrahim A, **Hovda DA**, Villablanca JR, Chugani HT. D2 Receptor densities of striatum in adult and neonatal hemispherectomized cats. 7th International Catecholamine Symposium, 1992.
23. Becker DP, **Hovda DA**. Metabolic derangement following concussive brain injury. 1992 Winter Conference on Brain Research, January, 1992, Steamboat Springs, CO.
24. Badie H, **Hovda DA**, Becker DP. Glial fibrillary acidic protein expression following concussive brain injury: A quantitative study of the effects of a second insult. American Association of Neurological Surgeons, April 11-16, 1992.
25. Thomas S, **Hovda DA**, Samii M, Becker DP. Fluid-percussion injury in the developing rat pup: Studies of cerebral metabolism. American Association of Neurological Surgeons, April 11-16, 1992.
26. Badie B, Karimi S, Fineman I, Ross RA, **Hovda DA**, Becker DP, Martin N. Metabolic alterations accompany ionic disturbances during hypoxic insult to the retina: An *in vitro* study. American Association of Neurological Surgeons, April 11-16, 1992.
27. Adelson PD, Ogawa H, **Hovda DA**, Becker DP, Caron MJ. Acute alterations in cerebral metabolism and glutamate concentrations following suction/ablation injury. American Association of Neurological Surgeons, April 11-16, 1992.
28. Fu K, Smith M, Thomas S, **Hovda DA**, Becker DP. Cerebral concussion produces a state of vulnerability lasting for as long as 5 hours. American Association of Neurological Surgeons, April 11-16, 1992.
29. **Hovda DA**. Microdialysis in epilepsy, trauma and ischemia. 26th Winter Conference on Brain Research, Whittler, BC, Canada, January 23-30, 1993.
30. **Hovda DA**. Head Injury: Modeling and Mechanisms. 4th Annual Spring Brain Conference, Orlando, FL, March 18-21, 1993.
31. Fisher D, Velarde F, Adelson PD, **Hovda DA**, Becker DP. Fluid percussion injury induces prolonged changes in cerebral blood flow. American Association of Neurological Surgeons, April 24-29, 1993.
32. Doberstein C, Fineman I, **Hovda DA**, Martin N, Becker DP. Metabolic alterations accompany ionic disturbances during a hypoxic insult to the retina: An *in vitro* study. American Association of Neurological Surgeons, April 24-29, 1993.
33. Ogawa H, **Hovda DA**, Becker DP. Cerebral protein synthesis in the rat: Further studies following fluid percussion injury. American Association of Neurological Surgeons, April 24-29, 1993.
34. Lee SL, Sindt R, von Stück SL, **Hovda DA**, Becker DP. Quantitative morphological analysis of cortical contusion injuries in rats. American Association of Neurological Surgeons, April 22-27, 1995.

David A. Hovda, PhD

35. Lee SL, **Hovda DA**, Becker DP. Core of degenerating neurons in parietal cortex induces spreading depression immediately following traumatic brain injury. American Association of Neurological Surgeons, April 22-27, 1995.
36. Bergsneider M, Kelly DF, Shalmon E, Caron MJ, Mazziotta J, Phelps ME, **Hovda DA**, Becker DP. Remote metabolic depression following traumatic brain injury: Results from human positron emission tomography. American Association of Neurological Surgeons, April 22-27, 1995.
37. Lee SM, Lifshitz J, Le HM, Smith ML, **Hovda DA**, Becker DP. Uncoupling of glucose metabolism and blood flow in degenerating cortical and hippocampal areas following unilateral cortical contusion. American Association of Neurological Surgeons, April 22-27, 1995.
38. Shalmon E, Kelly DF, Bergsneider M, Caron MJ, Smith MS, Iocolano SE, **Hovda DA**, Becker DP. Human cerebral microdialysis: Dynamic changes in EAA following severe brain injury. American Association of Neurological Surgeons, April 22-27, 1995.
39. Frazee JG, Luo X, Shiroishi MS, **Hovda DA**. Delayed treatment of prolonged ischemia by retrograde transvenous neuroperfusion prevents stroke. American Association of Neurological Surgeons, April 22-27, 1995.
40. Lee SM, Smith ML, **Hovda DA**, Becker DP. Concussive brain injury results in chronic vulnerability to post-traumatic seizures. 7th Annual Spring Brain Conference, March 6-10, 1996.
41. **Hovda DA**, Bergsneider M, Kelly D, Martin N, Vespa P, Becker DP. Metabolic dysfunction following brain injury. 7th Annual Spring Brain Conference, March 6-10, 1996.
42. Thomas S, **Hovda DA**, Becker DP, Samii M. Glucose metabolism in the developing rat pup following diffuse brain injury. Joint Meeting of the German and British Neurosurgical Societies, September 14-17, 1996.
43. Vespa PM, Bergsneider M, **Hovda DA**, Prins M, Becker DP. Transient Glutamate Fluctuations after Traumatic Brain Injury associated with Altered Regional Glucose Metabolism: A combined Microdialysis and Positron Emission Tomography study. Fiftieth Annual Meeting of the American Academy of Neurology, Minneapolis, MN, April 28-30, 1998.
44. Bergsneider M, **Hovda DA**, Lee SM, Kelly DF, Huang SC, McArthur DL, Bookheimer SY, Vespa PM, Shalmon E, Phelps ME, Becker DP. Depression of Cerebral Glucose Metabolism Following Human Traumatic Brain Injury: A Functional and Regional Analysis Using Positron Emission Tomography. American Association of Neurological Surgeons Annual Meeting, New Orleans, LA, April 24 - 29, 1999.
45. Bergsneider M, Vespa PM, Sehati N, Shalmon E, Kelly DF, Huang SC, Phelps ME, **Hovda DA**, Becker DP. Early Fluorodeoxyglucose Pet is Predictive of Delayed Neuroanatomical Findings Following Human Traumatic Brain Injury. American Association of Neurological Surgeons Annual Meeting, New Orleans, LA, April 24-29, 1999.
46. Nenov VI, Etchepare M, Yamaguchi Y, McArthur D, Vespa P, Buxey F, Martin N, **Hovda DA**, Kraus J, Becker DP. Automated Data Capture and Analysis at UCLA's Neurosurgical Intensive Care Unit. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA,

April 8-13, 2000.

47. Glenn TC, Samii A, Patel A, Lee SM, DeJesus C, Sugay J, Martin NA, **Hovda DA**. Induced Subarachnoid Hemorrhage is a Significant Secondary Insult as Determined in a Lateral Fluid Percussion Model of Traumatic Brain Injury. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 8-13, 2000.
48. Maeda T, Samii A, **Hovda DA**, Lee SM. Restoration of Near-Normal rCBF using Verapamil and Vasopressors Following Traumatic Brain Injury in Rats. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 8-13, 2000.
49. Giza CC, Lee SM, Kremen TJ, **Hovda DA**, Becker DP. Concussion in the developing rat triggers NMDA receptor dysfunction by altering subunit composition in cortex and hippocampus. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
50. Lee SM, Moore AH, Shieh E, **Hovda DA**, Becker DP. Acute Depression of Oxidative Metabolism Following Experimental Concussion. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
51. Maeda T, Glenn TC, **Hovda DA**, Lee SM, Becker DP. Real Time Laser-Doppler Perfusion Imaging of Experimental Traumatic Brain Injury in Rats. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
52. Glenn TC, Vespa PA, Kelly DF, Oertel M, Boscardin J, Matharu S, **Hovda DA**, Martin NA. Does Lactate Uptake Occur in Human Brain Following Traumatic Brain Injury? Evidence from a Modified Kety-Schmidt Technique. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
53. Glenn TC, Vespa PA, Kelly DF, Oertel M, Boscardin J, Matharu S, **Hovda DA**, Martin NA. Confirmation of Cerebral Hyperglycolysis Following Human Traumatic Brain Injury as Demonstrated by a Modified Kety-Schmidt Method. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
54. Giza CC, Lee SM, Kremen TJ, **Hovda DA**, Becker DP. Concussion in the Developing Rat Triggers NMDA Receptor Dysfunction by Altering Subunit Composition in Cortex and Hippocampus. American Association of Neurological Surgeons Annual Meeting, Toronto, Ontario, Canada, April 21-26, 2001.
55. Li HH, Lee SM, **Hovda DA**, Ying ZL, Gomez-Pinilla F. Up-Regulation of Genes Related to Synaptic Plasticity in Rats Exposed to Music Revealed by Microarray. Society for Neuroscience 31<sup>st</sup> Annual Meeting, San Diego, CA, November 10-15, 2001
56. **Hovda DA**. Effects of TBI: Biomechanics and Pathophysiology. State of New Mexico's Aging and Long-Term Services Department, On-Line and DVD Continuing Medical Education course entitled "The Silent Epidemic: Mild Traumatic Brain Injury: Part 1: Identification and Diagnosis", August 14, 2008
57. **Hovda DA**. What's so mild about mild traumatic brain injury? UCLA Department of



David A. Hovda, PhD

Neuropsychology Seminar Series, March 18, 2010

58. **Hovda DA.** Metabolic Dysfunction after Traumatic Brain Injury. Department of Defense TBI Grand Rounds (Teleconference), December 18, 2013
59. **Hovda DA.** The Neurobiology of Concussion and the Consequences of Repeat Injury. Defense and Veterans Brain Injury Center (Webinar), January 16, 2014

***CHAIRMAN OF SCIENTIFIC SESSIONS FOR PROFESSIONAL SOCIETIES AND MEETINGS***

1. "Head Injury"; 8th International Symposium on Intracranial Pressure, ICP and Craniospinal Dynamics, Rotterdam, The Netherlands, June 19, 1991.
2. "Clinical Outcome Measures"; The 1st International Neurotrauma Symposium, Fukushima City, Fukushima Japan, May 17, 1991.
3. "Trauma". Annual Meeting for the Society for Neuroscience, Anaheim, California, October 29, 1992.
4. "Imaging". 9th International Symposium on Intracranial Pressure; ICP And Its Related Problems, Nagoya, Japan; Chairman of Session O-14, May 16-19, 1994.
5. "Remote Mechanisms of Cellular Dysfunction". 6th Annual Spring Brain Conference, Sedona, Arizona, March 1-5, 1995.
6. 3rd International Neurotrauma Symposium, Toronto, Ontario, Canada, Chairman of the Workshop: Pharmacological Treatment of Experimental Head Injury, July 22-37, 1995.
7. "Imaging Strategies in Clinical and Preclinical TBI; Involvement of Blood Brain Barrier in TBI". Astra Corporation, Anaheim, CA, February 10, 1997.
8. "Open Communications". 17th Annual National Neurotrauma Symposium, Miami Beach, Florida, October 22-23, 1999.
9. "The University of California Neurotrauma Research Initiative", The Inaugural University of California Neurotrauma Meeting, Quail Lodge, Carmel, CA, August 1-3, 2000
10. "How Relevant are our Models?" 18th Annual National Neurotrauma Symposium, New Orleans, LA, November 3-4, 2000.
11. 2<sup>nd</sup> Annual University of California Neurotrauma Symposium, Ojai Valley Inn, Ojai, CA, August 8-10, 2001
12. "Patient Presentation" 19th Annual National Neurotrauma Symposium, San Diego, CA, November 9-10, 2001.
13. 3<sup>rd</sup> Annual University of California Neurotrauma Symposium, Silverado Resort, Napa Valley, CA, August 7-9, 2002

David A. Hovda, PhD

14. 4<sup>th</sup> Annual University of California Neurotrauma Symposium, Hilton La Jolla Torrey Pines, La Jolla, CA, August 20-22, 2003
15. 5<sup>th</sup> Annual University of California Neurotrauma Symposium, Quail Lodge, Carmel, CA, August 18-20, 2004
16. 6<sup>th</sup> Annual University of California Neurotrauma Symposium, Ojai Valley Inn, Ojai, CA, August 10-12, 2005
17. 7<sup>th</sup> Annual University of California Neurotrauma Symposium, Quail Lodge, Carmel, CA, August 2-4, 2006
18. 8<sup>th</sup> Annual University of California Neurotrauma Symposium, Fess Parker's DoubleTree Resort, Santa Barbara, CA, September 23-25, 2007
19. 9<sup>th</sup> Annual University of California Neurotrauma Symposium, Quail Lodge, Carmel, CA, June 23-25, 2008
20. 2<sup>nd</sup> Joint Symposium of the International and National Neurotrauma Societies, Fess Parker's DoubleTree Resort, Santa Barbara, CA, September 7-11, 2009
21. 11<sup>th</sup> Annual University of California Neurotrauma Symposium, Toll House, Los Gatos, CA, August 22-24, 2010
22. 12<sup>th</sup> Annual University of California Neurotrauma Symposium, Fess Parker's DoubleTree Resort, Santa Barbara, CA, September 25-27, 2011
23. 13<sup>th</sup> Annual University of California Neurotrauma Symposium, DoubleTree by Hilton Sonoma Wine Country, Rohnert Park, CA, September 9-11, 2012
24. 14<sup>th</sup> Annual University of California Neurotrauma Symposium, Fess parker's DoubleTree Resort, Santa Barbara, CA, September 22-24, 2013
25. 15<sup>th</sup> Annual University of California Neurotrauma Symposium, Quail Lodge, Carmel, CA, September 14-16, 2014

***INVITED LECTURES, VISITING PROFESSORSHIPS, SEMINARS AND COLLOQUIUMS;  
INVITED AS FACULTY FOR NATIONAL AND INTERNATIONAL SYMPOSIUMS***

1. *Recovery of Function After Brain Injury*, University of New Mexico, Albuquerque, NM, April 23, 1985
2. *The Neuroscience of Psychiatry*. Memorial Hospital, Albuquerque, NM, May 6, 1986
3. *Neonatal cerebral hemispherectomy blocks development of binocular depth perception in cat*. Neuropsychiatric Institute, UCLA, Los Angeles, CA, June 12, 1986
4. *Recovery of function following brain injury: Studies of diaschisis*. Department of Neurosurgery, School of Medicine, UCLA, Los Angeles, CA, June 10, 1987



David A. Hovda, PhD

5. *Metabolic maturation of the brain: A study of local cerebral glucose utilization in the cat.* Neuropsychiatric Institute, UCLA, Los Angeles, CA, June 11, 1987
6. *Recovery of function following neonatal and adult cerebral hemispherectomy in the cat: Anatomical and behavioral measures.* Department of Zoology, Arizona State University, Phoenix, AZ, February 10, 1988
7. *Metabolic studies of brain maturation and plasticity in the cat.* Department of Neurology, UCLA, Los Angeles, CA, December 7, 1988
8. *Reorganization of brain anatomy and behavior after neonatal or adult cerebral hemispherectomy. II. Visual System.* Jules Stein Eye Institute, UCLA, Los Angeles, CA, December 16, 1988
9. *Sparing of visual field perception following neonatal cerebral hemispherectomy in the cat.* Mental Retardation Research Center Annual Conference, Arrowhead, CA, October 21, 1989
10. *Metabolic and anatomical aspects of recovery of function following brain injury.* Neuroscience Grand Rounds, UCLA, Los Angeles, CA, March 7, 1990
11. *Ionic flux and metabolic demands affect recovery following traumatic brain injury.* University of New Mexico School of Medicine, Albuquerque, NM, March 23, 1990
12. *Pharmacological treatment of head injury.* New Medico Community Re-Entry Center, Apple Valley, CA. July 11, 1990
13. *Biochemistry of brain injury.* UCLA Harbor Neurology Grand Rounds, Los Angeles, CA, August 24, 1990
14. *Metabolism and recovery of function following brain injury: Effects of ionic flux and age-at-lesion.* Theoretical and Experimental Basis for Pharmacological and Rehabilitation Strategies. CNR Research Institute, Indianapolis, IN, October 24-26, 1990
15. *Surgical Approaches to the Skull Base, "Anatomical Review".* UCLA School of Medicine, Los Angeles, CA, September 12, 1991
16. *Cerebral metabolism following hemispherectomy: A Reflection of Neuroplasticity.* UCLA Mental Retardation Research Center, Annual Conference, Arrowhead, CA, October 13, 1991
17. *Metabolic derangements in the injured brain.* Daniel Freeman Memorial Hospital, Los Angeles, CA, October 15, 1991
18. *Investigational aspects of brain trauma.* III International Course on Clinical Neurosurgery, Krankenhaus Nordstadt, Hannover Germany, December 6, 1991
19. *Brain trauma - biochemical consequences and pharmacological implications.* 3<sup>rd</sup> International Course on Clinical Neurosurgery, "Brain Injury", Neurochirurgische Klinik, Krankenhaus Nordstadt, Hannover, Germany, December 10, 1991

David A. Hovda, PhD

20. *The neurochemical and neurometabolic consequence of brain injury.* Department of Neurosurgery, Nihon University, School of Medicine, Tokyo, Japan, February 6, 1992
21. *Computational Technologies for Substitution of Impaired Brain Function.* International Workshop on Neurobionics, Goslar, Germany, February 28 - March 1, 1992
22. *The neurochemical and neurometabolic consequence of brain injury.* NEUREX Corporation, Menlo Park, CA, March 4, 1992
23. *Pharmacology of cerebral protection.* The Southern California Neurosurgical Society, Santa Monica, CA, March 11, 1992
24. *The neurochemical and neurometabolic consequence of traumatic brain injury.* The University of Kansas Medical Center, Kansas City, KS, April 3, 1992
25. *Workshop on Animal Models of Traumatic Brain Injury (TBI).* Richmond, VA, April 8, 1992
26. *1<sup>st</sup> International Skull Base Congress.* Hannover, Germany, June 14-20, 1992
27. *Cerebral metabolism: A reflection of neural plasticity.* 10th Anniversary of the Queen Reina Sofia Award for Medical Science. Madrid, Spain, October 19, 1992
28. *Sparing of neurobehavioral function following neonatal, compared to adult cerebral hemispherectomy.* Department of Neurology, UCLA School of Medicine, Los Angeles, CA, December 7, 1992
29. *Trauma Session.* Brain Edema 1993, The 9<sup>th</sup> International Symposium. Tokyo, Japan, May 16-29, 1993
30. *Experimental Research: State of the Art.* 6th International Course on Clinical Neurosurgery, Hannover, Germany, June 5, 1993
31. *Matching Models to Man: Which Models in the 1990's?* 2<sup>nd</sup> International Neurotrauma Symposium. Glasgow, Scotland, July 4-9, 1993
32. *Ionic flux and metabolic dysfunction following traumatic brain injury: A period of cellular vulnerability.* 3rd Annual Meeting of the International Association for the Study of Traumatic Brain Injury (IASTBI), Tokyo, Japan, September 8-11, 1993
33. *The Animal Research Committee - A Faculty and Administrative Perspective.* Animal Care and Use Symposium, UCLA School of Medicine, Los Angeles CA, October 12, 1993
34. *Metabolic dysfunction following traumatic brain injury.* 11th Annual Neurotrauma Symposium, Washington, DC, November 6, 1993
35. *Neural Trauma.* UCLA Clinical Neuroscience Grand Rounds, UCLA, Los Angeles, CA, February 16, 1994
36. *Neurochemical changes after traumatic brain injury.* 1994 Center Symposium, Center for

David A. Hovda, PhD

Network Neuroscience, University of North Texas, Denton, TX, March 11, 1994

37. *Neonatal vs. adult cerebral hemispherectomy: Recovery of Function.* 16th International Symposium: Development and Plasticity of the Visual System, Montreal, Canada, May 10, 1994
38. *Cerebral Microdialysis: Moving from Animal to Man.* The International Symposium on Neurochemical Brain Monitoring, Tokyo, Japan, May 21, 1994
39. *Metabolic Dysfunction Following Brain Injury.* Dental Research Institute Seminar, UCLA, Los Angeles CA, October 18, 1994
40. *Mechanisms of brain damage and opportunities for Neuroprotection in patients with head injury,* Neuroprotection Meeting, Medical College of Virginia, Virginia Commonwealth University, Richmond, VA, November 2-4, 1994
41. *Basic and Clinical Head Injury Research: New Directions and Implications for Treatment,* School of Medicine, University of California, Irvine, CA, November 23, 1994
42. *Basic Neurochemical and Neurometabolic Consequences of Traumatic Brain Injury,* Annual Neurosurgical Symposium: Neurosurgical Emergencies, The Huntington Library, San Marino, CA, May 3, 1995
43. *The Neurochemical and Neurometabolic Cascade Following Traumatic Brain Injury: Implications for Recovery of Function,* Department of Physiology, University of New Mexico, Albuquerque, NM, May 11, 1995
44. *What is a Psychologist doing in Neurosurgery?,* Department of Psychology, University of New Mexico, Albuquerque, NM, May 12, 1995
45. *Head Injury in Sports,* Sports Lawyers Association Conference, Boston, MA, May 18-20, 1995
46. *Neurochemical and Metabolic Response to Brain Injury,* The Department of Molecular and Medical Pharmacology, UCLA, Los Angeles, CA, October 4, 1995
47. *Clinical Metabolic and Neurochemical Update,* The Neurotrauma Society Annual Meeting, San Diego, CA, November 11, 1995
48. *Metabolic and Blood Flow Studies in Brain Injury: Linking Laboratory to Bedside,* The 1996 Advances in Acute Neurotrauma Conference, University of Pennsylvania, Philadelphia, PA, January 20, 1996
49. *Uncoupling of Glucose and Oxidative Metabolism: The Cellular Pathophysiology of Brain Injury,* 1st Conference on Cerebral Oxygenation, Erasmus University, Rotterdam, the Netherlands, February 24, 1996
50. *Injury-Induced Metabolic Uncoupling: Basic and Clinical Evidence for Defining Vulnerability, Pathophysiology of Secondary Brain Injury and Implications for Contemporary Treatment,* University of Pittsburgh Medical Center, Pittsburgh, PA, May 17-18, 1996

David A. Hovda, PhD

51. *Clinical and Laboratory Studies of Disturbances in Cerebral Blood Flow and Metabolism Coupling Following Traumatic Brain Injury*, 14th Annual Neurotrauma Symposium, Washington, DC, November 15-16, 1996
52. *Vascular and Metabolic Changes Following Traumatic Brain Injury*. 14th Annual Neurotrauma Symposium, Washington, DC, November 15-16, 1996
53. *Pharmacology of Head Injury*, Department of Molecular and Medical Pharmacology, UCLA, Los Angeles, CA, November 27, 1996
54. *Recovery of Function*, Biomedical Physics Interdepartmental Graduate Program, UCLA, Los Angeles, CA, December 5, 1996
55. *Recent Developments in Head Trauma Research*, National Science Teacher's Association Conference, San Francisco, CA, December 28, 1996
56. *Mechanisms of Traumatic Brain Injury: Lessons from the Animal Family*. Society of Critical Care Medicine's 26th Educational & Scientific Symposium, San Diego, CA, February 8, 1997
57. *Cerebral Blood Flow and Metabolism: Influence on pathology, outcome, and therapeutic strategy*, Astra Corporation, Anaheim, CA, February 10, 1997
58. *Metabolic Dysfunction Following Traumatic Brain Injury*, The Blood-Brain Barrier Conference, UCLA, Los Angeles, CA, February 12, 1997
59. *Head Injuries: Fact and Fiction*, American Medical Society for Sports Medicine 6th Annual National Meeting, Colorado Springs, CO, April 5-9, 1997
60. *Cerebral Blood Flow and Metabolism Following Traumatic Brain Injury*, Joint Section on Neurotrauma and Critical Care, 65th Annual Meeting of The American Association of Neurological Surgeons Denver, CO, April 12-17, 1997
61. *Microdialysis and PET*, 2nd International Symposium on Clinical Microdialysis, Uppsala, Sweden, April 23-25, 1997
62. *Pathophysiology of Concussive Injury*, World Boxing Council, First Medical World Boxing Congress, "Facing the 21<sup>st</sup> Century," Aruba, Mexico, April 30-May 4, 1997
63. *Hyperglycolysis and Brain Injury*, Allegheny University Department of Neurosurgery Conference, Allegheny University of the Health Sciences, Philadelphia, PA, August 5, 1997
64. *Metabolic Dysfunction Following Traumatic Brain Injury: Reflections of Vulnerability in Recovery of Function*, University of California, San Diego, Division of Neurological Surgery Grand Rounds, San Diego, CA, Thursday, August 20, 1997
65. *Secondary Injury and Acidosis*. 4<sup>th</sup> International Neurotrauma Symposium. Seoul, Korea, August 23-28, 1997
66. *Cerebral Hyperglycolysis Following Severe Traumatic Brain Injury in Humans: A Positron*

David A. Hovda, PhD

*Emission Tomography Study.* 6th Vienna Shock Forum in association with the European Shock Society, Vienna, Austria, Sunday, November 9, 1997

67. *Neurobiology of Traumatic Brain Injury.* Harbor-UCLA Medical Center, Pediatric Critical Care Group, Torrance, CA, November 20, 1997
68. *Introduction of the Revised AC-2 Form.* UCLA Chancellor's Animal Research Committee (ARC), Office for Protection of Research Subjects (OPRS), Training and Information Workshop, Los Angeles, CA, November 25, 1997
69. *Transition from Preclinical to Clinical Trials.* Brain Injury Association on Clinical Trials. University of Virginia, December 5-7, 1997
70. *Metabolic Dysfunction.* The American Orthopaedic Society for Sports Medicine Head Injury Workshop, Chicago, IL, December 10-12, 1997
71. *The Metabolic Basis of Concussion.* Sports Related Concussion Conference, Orlando, FL, March 6-9, 1998
72. *The Neuroscience of Neurosurgery.* Gurdjian Lecture Series, Wayne State University, Detroit, MI, May 12-13, 1998
73. *The Pathobiology of Traumatic Brain Injury: Relevance to Cellular Vulnerability.* Gurdjian Lecture Series, Wayne State University, Detroit, MI, May 12-13, 1998
74. *Neurophysiology of MTBI.* National Football League Physicians Conference, MTBI and Cervical Spine Conferences, Essex House, New York, NY, August 18, 1998
75. *Neurophysiology of MTBI.* National Football League Physicians Conference, MTBI and Cervical Spine Conferences, Arizona Biltmore, Phoenix, AZ, August 25, 1998
76. *The Neurobiology of Concussion: Vulnerability and Secondary Risks.* 4<sup>th</sup> Detroit Neurosurgery Symposium, Neural Injury: Advanced Brain Life Support. Atheneum Suite Hotel and Convention Center, Detroit, MI, November 12-15, 1998
77. *Neurobiology of Traumatic Head Injury: From the Laboratory to the Clinic,* The Robert and Phyllis Levitt Department of Neuroscience and the University of Florida Brain Institute Seminar, Gainesville, FL, December 11, 1998
78. *The Neurobiology of Concussion.* UCLA Sports Medicine Conference Series, UCLA Medical Plaza, Los Angeles, CA, March 3, 1999
79. *Pathobiology of Traumatic Brain Injury.* Kaiser Permanente, CME Program, Woodland Hills, CA, March 10, 1999
80. *Physiological Impact of Mild Concussion.* Sixth Annual Conference on Neurobehavioral Rehabilitation for Acquired Brain Injury, Acquired Brain Injury Program, Hamilton Health Sciences Corporation, Hamilton, Ontario Canada, May 6-7, 1999

David A. Hovda, PhD

81. *Mild Traumatic Brain Injury: Effects on Cerebral Development and Plasticity*. Sixth Annual Conference on Neurobehavioral Rehabilitation for Acquired Brain Injury, Acquired Brain Injury Program, Hamilton Health Sciences Corporation, Hamilton, Ontario Canada, May 6-7, 1999
82. *Pathophysiology of Concussion: Effects of Concussion on the Brain*. Sports Head Injury Symposium 1999, West Coast Sports Medicine Foundation, Westwood, CA, June 12, 1999
83. *Mild Traumatic Brain Injury: Effect on Neuroplasticity and Development*. The American Orthopaedic Society for Sports Medicine Head Injury Workshop, Traverse City, MI, June 20-22, 1999
84. *Mechanisms of Head Injury*, The American Orthopaedic Society for Sports Medicine Head Injury Workshop, Traverse City, MI, June 20-22, 1999
85. *Traumatic Brain Injury and Metabolic Diaschisis: Implications for Secondary Injury*, University of Pittsburgh Brain Research Center, Department of Neurosurgery, Pittsburgh, PA, July 14, 1999
86. *Traumatic Brain Injury: Pathobiology and Effects on Long Term Plasticity*. University of Virginia, Department of Neurosurgery, Charlottesville, VA, October 29, 1999
87. *Traumatic Brain Injury: How Sweet it is*. UCLA Department of Surgery Grand Rounds, UCLA School of Medicine, Los Angeles, CA, January 26, 2000
88. *Cerebrovascular Disease, Interactive Discussion*. 22<sup>nd</sup> Princeton Conference on Cerebrovascular Disease. Hotel Sofitel, Redwood City, CA, March 10-12, 2000
89. *Traumatic Brain Injury: How Sweet it is*. University of Texas, Houston, Department of Neurobiology and Anatomy Grand Rounds, University of Texas, Houston Health Science Center, Houston, TX, April 7, 2000
90. *Introduction to the UCLA Brain Injury Research Center*, The Inaugural University of California Neurotrauma Meeting, Quail Lodge, Carmel, CA, August 1-3, 2000
91. *Head Trauma*, West Los Angeles Veteran's Administration Hospital Grand Rounds, West Los Angeles, CA, August 11, 2000
92. *Function and Derangements of the Cerebral Energy Metabolism in Brain Injury*. 5<sup>th</sup> International Neurotrauma Symposium, Garmisch, Germany, October 1-5, 2000
93. *Sports and Head Injury in Children*. Child Neurology Society Meeting, St. Louis, MO, October 25-28, 2000
94. *Metabolic Dysfunction Following CNS Trauma*, Neural Repair Course, UCLA, Los Angeles, CA, February 26, 2001
95. *Acute Pathophysiology Following Traumatic Brain Injury in Animals and Humans*. 12<sup>th</sup> Annual Spring Brain Conference, Sedona, AZ, March 7-11, 2001
96. *The Pathophysiology of Traumatic Brain Injury: Cellular Vulnerability and Plasticity*. Medical



David A. Hovda, PhD

College of Virginia, Department of Neurosurgery, Richmond, VA, April 10-12, 2001

97. *Imaging the Neurobiology of TBI: PET Studies in Animal and Man.* Temple University Neurotrauma Research Lab Seminar Series, Philadelphia, PA, May 10-11, 2001
98. *The Metabolic Cascade of Traumatic Brain Injury: Reflections on Cellular Vulnerability and Plasticity.* International Trauma Anesthesia and Critical Care Society Meeting, San Diego, CA, May 17-19, 2001
99. *Cellular Energy Crisis Following Traumatic Brain Injury: Reflections on Cellular Vulnerability and Plasticity.* University of Kentucky Medical Center, Spinal Cord and Brain Injury Research Center Seminar, Lexington, KY, May 20-22, 2001
100. *The Cellular Response to Traumatic Brain Injury: Basic and Clinical Update.* University of Tennessee Health Science Center, Departments of Neurosurgery and of Anatomy and Neurobiology, Memphis, TN, May 25, 2001
101. *Imaging the Pathobiology of Mild Traumatic Brain Injury.* American College of Sports Medicine Conference, Baltimore, MD, May 30-June 1, 2001
102. *Cerebral Metabolic Crisis Following Traumatic Brain Injury.* Brain 01, Taipei, Taiwan, June 9-13, 2001
103. *The Brain's Response to Injury: Biomechanics and Biology: Animal Studies.* Neuropsychological Consequences of Head Impact in Youth Soccer, Washington, DC, October 12, 2001
104. *It Was Just a Bump on the Head.* Social Services Administration, County of Orange, CA, November 6, 2001
105. *Energy Crisis After Traumatic Brain Injury: Reflections of Cellular Vulnerability and Dysfunction.* Loma Linda University, Loma Linda, CA, December 19, 2001
106. *Energy Crisis after Traumatic Brain Injury.* Amgen, Thousand Oaks, CA, January 8, 2002
107. *Energy Crisis in Traumatic Brain Injury.* UCLA, Los Angeles, CA, January 27, 2002
108. *What is Needed to Validate/Refine Animal Models of TBI.* NINDS Brain Banking Workshop, Bethesda, MD, March 11 & 12, 2002
109. *Imaging the Pathobiology of Traumatic Brain Injury.* Lawrence Berkeley National Laboratories, Berkeley, CA, June 4, 2002
110. *Imaging the Neurobiology of Traumatic Brain Injury.* University of New Mexico, Albuquerque, NM, June 14 & 15, 2002
111. *The Pathophysiology of Traumatic Brain Injury: Imaging Cellular Vulnerability and Recovery of Function.* Children's Hospital & Research Center at Oakland, Oakland, CA, August 6, 2002

David A. Hovda, PhD

112. *Mild Traumatic Brain Injury*. 1<sup>st</sup> Joint Symposium of the National and International Neurotrauma Societies. Tampa, FL, October 26-31, 2002
113. *The Cerebral Energy of Recovery from Traumatic Brain Injury*. Center for Traumatic Brain Injury Studies and the Comprehensive Center for Pain Research at the University of Florida, February 28, 2003
114. *Innovative Concepts in Traumatic Brain Injury: Neurobiological and Neurobehavioral Aspects*. Walter Reed Institute for Post Graduate Study in Neurobehavior, Spring 2003 Conference, at Walter Reed Army Medical Center, Washington, DC, April 30 & May 1, 2003
115. *Concussion and Cerebral Energy Failure*. American Osteopathic Academy of Sports Medicine 18<sup>th</sup> Annual Clinical Conference. San Diego, CA, April 30–May 3, 2003
116. *Traumatic Brain Injury Early in Life: Cerebral Energy, Metabolism and the Subsequent Effects on Neuroplasticity*. National Children's Study Workshop, Bethesda, MD, September 11 & 12, 2003
117. *Concussion in the Developing Brain: The Cost to Neuroplasticity*. 23<sup>rd</sup> Annual National Academy of Neuropsychology Conference. Dallas, TX, October 15-18, 2003
118. *Metabolic Crisis Following Traumatic Brain Injury*. 12<sup>th</sup> Annual Meeting of the Rachidian Society, Kona, HI, February 22 – 26, 2004.
119. *Mild Traumatic Brain Injury Reduces the Capacity for Experience Dependent Plasticity in the Developing Rat*. 12<sup>th</sup> Annual Meeting of the Rachidian Society, Kona, HI, February 22–26, 2004.
120. *Metabolic Crisis Following Traumatic Brain Injury*. 15<sup>th</sup> Annual Spring Brain Conference, Sedona, AZ, March 10-13, 2004.
121. *Metabolic Crisis Following Traumatic Brain Injury*. 27<sup>th</sup> Annual Meeting of the Japan Society of Neurotraumatology. Tokyo, Japan, March 26, 2004
122. *Post-Traumatic Cerebral Metabolic Dysfunction and Its Impact on Neuronal Plasticity*. Neural Repair Seminar, University of California, Los Angeles, CA, April 2, 2004.
123. *Alterations in Brain Energy Metabolism Following TBI*. Grand Rounds, University of California, Davis, CA, April 14, 2004.
124. *Metabolic Crisis Following Traumatic Brain Injury. An Introduction to Metabolic Therapy*. Neurological PET: Expanding Neurology Workshop, Arlington, VA, April 17, 2004.
125. *Metabolic Therapy for Recovery of Function From Traumatic Brain Injury*. Grand Rounds, University of California, Irvine, CA, May 5, 2004.
126. *Brain Trauma and Ischemia: Similarities and differences*. XV SMART Congress. Milan, Italy, May 12-14, 2004
127. *Energy Crisis and Recovery of Function Following Traumatic Brain Injury*. University of



David A. Hovda, PhD

Florida, Gainesville, FL, May 24, 2004.

128. *Energy Crisis and Fuel Use After TBI: A New Approach to Metabolic Therapy*. Grand Rounds, Safar Center for Resuscitation Research, University of Pittsburgh, PA, June 2, 2004
129. *The Brain Injured Client: A Primer*. 22<sup>nd</sup> Annual Consumer Attorneys Association of Los Angeles Convention, Las Vegas, NV, August 26-29, 2004
130. *Biological Basis of CNS Trauma and future Directions*. AANS/CNS Section on Pediatric Neurological Surgery Annual Meeting. San Francisco, CA, December 8-11, 2004
131. *Clinical Application of Non-Invasive Imaging Techniques to Study Recovery Following Brain Injury (Quantitative Positron Emission Tomography)*. CVCSN 17<sup>th</sup> Annual Symposium, Virginia Commonwealth University (Medical College of Virginia), Richmond, VA, March 14, 2005
132. *Cerebral Metabolism in Trauma*. 2005 Academy of Molecular Imaging Annual Conference, Orlando, FL, March 19-23, 2005
133. *TBI-Induced Developmental Disability*. University of California, San Francisco, CA, April 12, 2005.
134. *Cerebral Metabolism and TBI*. 6<sup>th</sup> Annual University of California Neurotrauma Meeting, Ojai, CA, August 12, 2005
135. *Challenges for Experience-Dependent Plasticity Following a Traumatic Brain Injury: A Roadblock for Rehabilitation*. Spinal Cord and Brain Injury Neuro-Rehabilitation Symposium and Spinal Cord Injury Association of Kentucky Summit, Lexington, KY, September 30, 2005
136. *The Metabolic Cost of Recovery of Function After Traumatic Brain Injury*. Licht Lecture for the Department of Physical Medicine and Rehabilitation, University of Minnesota, Minneapolis, MN, October 6, 2005
137. *Nonconvulsive Seizures Result in Metabolic Distress After TBI*. 4<sup>th</sup> Meeting of Co-Operative Study on Brain Injury Depolarizations (COSBID), Walter Reed Army Institute of Research, Silver Spring, MD, November 12, 2005
138. *Traumatic Brain Injury and Metabolic Diaschisis*. University of California, Irvine, CA, January 20, 2006
139. *Cerebral Metabolic Diaschisis After Traumatic Brain Injury*. University of Maryland, Baltimore, MD, March 7, 2006
140. *Redefining Cerebral Metabolism Following Traumatic Brain Injury: Translational Research Using Positron Emission Tomography*. The Perot Brain & Nerve Injury Center's Pediatric Brain Injury Symposium, Children's Medical Center of Dallas, TX, March 31, 2006
141. *Recovery of Function after Traumatic Brain Injury in Humans and Rodent Experimental Models: The Role of Energy and Input*. Southern Illinois University, Carbondale, IL, April 21, 2006

David A. Hovda, PhD

142. *The Metabolic Response to Traumatic Brain Injury: Issues of Cellular Vulnerability and Recovery of Function.* American Association of Neurological Surgeons 2006 Congress, San Francisco, CA, April 22–27, 2006
143. *Effect of Environmental Enrichment on Cognitive Function after Early Lesion of the Brain.* University Medical Center, Groningen, The Netherlands, May 11-13, 2006
144. *Plasticity and enriched Environment after Experimental Pediatric TBI: Implications for Treatment and Rehabilitation.* 8<sup>th</sup> International neurotrauma Symposium, Rotterdam, The Netherlands, May 21-25, 2006
145. *Cerebral Metabolic Therapy and Recovery of Function.* 7<sup>th</sup> Annual State of the Art Medical and Rehabilitative Care in Brain Injury: Clinical and Legal Implications Conference, Napa Valley, CA, September 2, 2006
146. *The Cellular Pathophysiology of Concussion.* World Boxing Council 2<sup>nd</sup> Medical Congress, Cancun, Mexico, April 25, 2007
147. *What is so Mild about Mild Traumatic Brain Injury?* California Society of Physical Medicine & Rehabilitation Annual Meeting, Anaheim, CA, May 5, 2007
148. *Biomechanical, Neurobiological, and Behavioral Correlates of Transient Brain Injury.* Society for the Advancement of Brain Analysis, Avalon, Catalina Island, May 20, 2007
149. *Traumatic Brain Injury: A Question of Fuel and Energy.* Grand Rounds, The Veterans' Administration Healthcare System, Los Angeles, CA, June 22, 2007
150. *Traumatic Brain Injury: Medicine for Lawyers.* 25<sup>th</sup> Annual Consumer Attorneys Association of Los Angeles Convention, Las Vegas, NV, September 6-9, 2007
151. *Neurobiology of Traumatic Brain Injury Sustained During Cerebral Development.* New Frontiers in Pediatric Traumatic Brain Injury, San Diego, CA, November 8-10, 2007
152. *What's so Mild about Mild Traumatic Brain Injury?* 8<sup>th</sup> Annual State of the Art Medical and Rehabilitative Care in Brain Injury: Clinical and Legal Implications Conference, Napa Valley, CA, November 16-17, 2007
153. *The Neurobiology of Traumatic Brain Injury: Neuropathology and Recovery of Function.* Grand Rounds, Dept. of Pathology, University of New Mexico, Albuquerque, NM, December 13, 2007
154. *Neurobiology of Traumatic Brain Injury.* AIMBE TATRC Neurotrauma Bioengineering Meeting, Washington, DC, February 20-22, 2008
155. *The Neurobiology of Traumatic Brain Injury.* University of Hawaii, Honolulu, HI, March 3, 2008
156. *What is so Mild about Mild Traumatic Brain Injury?* Brain Injury Association of America 2008 Brain Injury Litigation Strategies Conference, Las Vegas, NV, April 4, 2008

157. *Advances in Understanding the Pathobiology of Concussion*. Sports Concussion Summit, Marina del Rey, CA, April 18, 2008
158. *Pathophysiology and Treatment of Traumatic Brain Injury*. Brain Injuries Conference, Seattle, WA, May 5-7, 2008
159. *Flow and Metabolism in the Acute Phase after TBI: Is the Brain in Shock?* International Shock Congress-2008, Cologne, Germany, June 28-July 2, 2008
160. *Pathophysiology of mTBI*. New Developments in Sports-Related Concussion Conference, Pittsburgh, PA, July 24-25, 2008
161. *Metabolic Management of Traumatic Brain Injury: Current Status and Emerging Concepts*. 26<sup>th</sup> Annual National Neurotrauma Symposium, Buena Vista, FL, July 27-30, 2008
162. *Traumatic Brain Injuries: Medicine for Lawyers*. 26<sup>th</sup> Annual Consumer Attorneys Association of Los Angeles Convention, Las Vegas, NV, August 28-31, 2008
163. *Metabolic Management of Traumatic Brain Injury: Current Status and Emerging Concepts to Enhance Recovery of Function*. Dr. Deborah L Warden Lectureship, 2<sup>nd</sup> Annual TBI Military Training Conference, Washington, DC, September 25-26, 2008
164. *PET and Neurochemistry in TBI*. Blast-Related Brain Injury, Imaging for Clinical and Research Applications, St. Louis, MO, October 2-4, 2008
165. *New Research Findings in Understanding the Brain after Mild TBI*. International Conference on Behavioral Health and Traumatic Brain Injury, Paterson, NJ, October 12-15, 2008
166. *Neurometabolic Cascade in Concussion*. Sports Concussion Symposium, 28<sup>th</sup> Annual Conference of the National Academy of Neuropsychology, New York, NY, October 21-25, 2008
167. *The Neurobiology of Mild Traumatic Brain Injury: The Neuroscience of Concussion and the Cost of Neuroplasticity in the Developing Brain*. 28<sup>th</sup> Annual Conference of the National Academy of Neuropsychology, New York, NY, October 21-25, 2008
168. *The Neuroscience of Brain Injury: Future Directions and Hope for the Future*. 28<sup>th</sup> Annual Conference of the National Academy of Neuropsychology, New York, NY, October 21-25, 2008
169. *Head Trauma: What can TBI tell us about ICH?* International Stroke Conference 2009, San Diego, CA, February 18-20, 2009
170. *The Vulnerability of the Developing Brain*. Central Virginia Chapter of the Society for Neuroscience Annual Symposium, Richmond, VA, March 13, 2009
171. *Sugar Coating TBI*. Grand Rounds, Greater Los Angeles VA Medical Center, Los Angeles, CA, March 27, 2009
172. *Biomechanical, Neurobiological and Behavioral Correlates of Transient Brain Injury*. Ochs Labs

David A. Hovda, PhD

Annual Conference, Los Gatos, CA, April 24-26, 2009

173. *Brain Anatomy*. Brain Injury Association of America 2009 Brain Injury Litigation Strategies Conference, Las Vegas, NV, April 30-May 1, 2009
174. *Concussion Update*. Department of Sports Medicine, David Geffen School of Medicine at UCLA, Los Angeles, CA, May 6, 2009
175. *Advances in the Biology of Traumatic Brain Injury*. National Summit on Concussion and Other Sports Medicine Injuries, Los Angeles, CA, May 15, 2009
176. *Concussion in the Developing Brain: A Cost to Neuroplasticity*. Association for Psychological Science National Convention, San Francisco, CA, May 22-25, 2009
177. *The Neurobiology of TBI: Metabolic Demands and Consequences for Recovery of Function*. Grand Rounds, Department of Psychiatry, David Geffen School of Medicine at UCLA, Los Angeles, CA, November 3, 2009
178. *The Cerebral Metabolic Response to Traumatic Brain Injury: Effects on Neuroplasticity and Recovery of Function*. Department of Neurobiology, A. I. Virtanen Institute for Molecular Sciences, University of Kuopio, Kuopio, Finland, November 12, 2009
179. *Cerebral Metabolic Needs for Recovery of Function*. 10<sup>th</sup> Annual State of the Art Medical and Rehabilitative Care in Brain Injury: Clinical and Legal Implications Conference, Napa Valley, CA, November 20-21, 2009
180. *Novel Next Generation Treatments in TBI*. Neurocritical Care in the ICU of the Future Symposium, University of California, Los Angeles, CA, January 28-29, 2010
181. *The Cerebral Metabolic Response to Traumatic Brain Injury: Effects on Neuroplasticity and Recovery of Function*. Phoenix Children's Hospital, Arizona State University, Phoenix, AZ, February 19, 2010
182. *The Cerebral Metabolic Response to Traumatic Brain Injury: Effects on Neuroplasticity and Recovery of Function*. University of Kentucky, Lexington, KY, March 11, 2010
183. *The Cerebral Metabolic Response to Traumatic Brain Injury: Effects on Neuroplasticity and Recovery of Function*. Brain Injury Litigation Strategies Conference, Brain Injury Association of America, Las Vegas, NV, April 30, 2010
184. *The Neurophysiology of Brain Injury: What Do We Know Today?* Brain Injury Conference, San Antonio, TX, May 1, 2010
185. *Metabolic Changes in the Brain Following Traumatic Brain Injury*. 5<sup>th</sup> Pannonian Symposium on CNS Injury, Pécs, Hungary, May 13-15, 2010
186. *The Cerebral Metabolic Response to Traumatic Brain Injury: Effects on Neuroplasticity and Recovery of Function*, Wayne State University, Detroit, MI, October 28, 2010

David A. Hovda, PhD

187. *TBI Early in Life: The Cost of Recovery of Function*. California Brain Injury Association Annual State of the Art Medical and Rehabilitative Care in Brain Injury: Clinical and Legal Implications Conference, Napa, CA, November 5, 2010
188. *Translational Research to Develop Effective Therapies for TBI: Current Initiatives from UCLA's Brain Injury Research Center (BIRC)*. Battlefield Healthcare Series Summit, San Antonio, TX, December 6, 2010
189. *Translational Research in Traumatic Brain Injury*. ICU of the Future, University of California, Los Angeles, CA, January 20, 2011
190. *The Pathophysiology of Mild Traumatic Brain Injury*. Challenges and Controversies in Research, Toronto Rehabilitation Institute, Toronto, Ontario, Canada, February 4, 2011
191. *Clinical Relevance of Pathophysiology following mTBI*. Challenges and Controversies in Research, Toronto Rehabilitation Institute, Toronto, Ontario, Canada, February 4, 2011
192. *The Neurobiology of Traumatic Brain Injury: Implications for Rehabilitation Medicine*. The Mark P. Clio MD Lectureship, Craig Hospital, Englewood, CO, February 25, 2011
193. *The Neurophysiology of Brain Injury: What do we know today?* (Keynote) From Concussion and Coma to Community, XIX Annual Providers' Conference, Brain Injury Association of Iowa, Des Moines, IA, March 10, 2011
194. *The Neurophysiology of Brain Injury: Applications for the Clinician*. From Concussion and Coma to Community, XIX Annual Providers' Conference, Brain Injury Association of Iowa, Des Moines, IA, March 10, 2011
195. *Advances in Understanding the Pathobiology of Concussion*. 43<sup>rd</sup> Annual Educational Meeting, American Association of Neuroscience Nurses, Kansas City, MO, March 20, 2011
196. *Altered Brain Metabolism without Ischemia*. 10<sup>th</sup> International Neurotrauma Symposium, Shanghai, China, April 29, 2011
197. *Strategies for Recovery of Function Targeting Neuroanatomical Development and Neurophysiological Function during Chronic Rehabilitation*. 3<sup>rd</sup> Federal Interagency Conference on TBI, Washington, DC, June 15, 2011
198. *Mechanisms of Concussion*. 29<sup>th</sup> Annual National Neurotrauma Symposium, Hollywood Beach, FL, July 13, 2011
199. *The Pathobiology of Sports Concussion*. 12<sup>th</sup> Annual Neuroscience of Brain Injury Conference, Brain Injury Association of America, Napa, CA, November 4, 2011
200. *Neurometabolic Cascade of Traumatic Brain Injury*. Riverside County Public Defender's Office, Riverside, CA, November 18, 2011
201. *Neurobiology of Traumatic Brain Injury Plasticity and Recovery*. 2012 Brain Injury Summit: A Meeting of the Minds, Beaver Creek, CO, January 9-11, 2012

David A. Hovda, PhD

202. *Neurotrauma – Designing a Novel Treatment*. ICU of the Future, University of California, Los Angeles, January 19, 2012
203. *Neurochemistry of Concussion*. Bridging the Gap: Current Science and Management of Concussion, Baltimore, MD, January 28, 2012
204. *Cerebral Effort in Terms of Traumatic Brain Injury and Recovery of Function*. Gail F. Beach Visiting Lecture, Miami Project to Cure Paralysis, Lois Pope LIFE Center, University of Miami, February 3, 2012.
205. *Metabolic Therapy for TBI*. 2<sup>nd</sup> Annual California Trauma and Resuscitation Conference, San Diego, CA, February 11, 2012
206. *The Neurophysiology of Brain Injury: What Do We Know Today?* New Frontiers in the Translational Science, Clinical Management, and Prevention of Traumatic Brain Injury, Medical College of Wisconsin, May 17, 2012
207. *The Neurometabolic Cascade of Concussion*. Third Biennial Pediatric Neurosciences Conference, Minneapolis, MN, June 1, 2012
208. *Metabolic Dysfunction after Brain Injury*. Concussion in Athletics: From Brain to Behavior, Penn State University Park, State College, PA, October 12, 2012
209. *The Energy Crisis of Traumatic Brain Injury*. Fuller Graduate School of Psychology, Fuller Theological Seminary, Pasadena, CA, October 29, 2012
210. *The Neuroscience of Traumatic Brain Injury*. 169<sup>th</sup> Annual Society of Clinical Surgery Meeting, University of California, Los Angeles, CA, November 2, 2012
211. *Pathophysiology of Traumatic Brain Injury*. Medical Research Council Trauma Network Workshop, University of Birmingham, Birmingham, England, November 30, 2012
212. *Metabolic Dysfunction after Traumatic Brain Injury*. Grand Rounds, United States Army, Los Angeles, CA, December 18, 2012
213. *The Neurobiology of Mild Traumatic Brain Injury*. 2013 Baseball Medicine Conference, Injury Prevention and Treatment Techniques, Baltimore, MD, January 3, 2013
214. *The Pathophysiology of Mild Traumatic Brain Injury*. Concussion: What You Don't Know CAN Hurt You, Oakland, CA, February 9, 2013
215. *The Neuroscience of Traumatic Brain Injury*. New York Neuropsychology Group Annual Spring Conference, New York, NY, March 9, 2013
216. *Metabolic Signatures of Repair*. Spring Brain Conference, Sedona, AZ, March 21, 2013
217. *Concussion: The Good, the Bad and the Ugly*. American Medical Society for Sports Medicine Annual Meeting, San Diego, CA, April 18, 2013



David A. Hovda, PhD

218. *Updates and Advances in the Neuroscience of Concussion*. Inaugural Sports Psychology Society Meeting and Symposium, Minneapolis, MN, May 4, 2013
219. *Mild TBI and Mental Health*. US Secretary of Defense Symposium on Traumatic Brain Injury, The Pentagon, Washington, DC, June 12, 2013
220. *The Neurometabolic Cascade of Traumatic Brain Injury*. American Association of Neuropathologists Annual Meeting, Charleston, SC, June 20, 2013
221. *The Cost of Saving the Brain after TBI*. The 6<sup>th</sup> Annual Neuroscience Symposium of the Central Coast, Santa Barbara, CA, October 12, 2013
222. *Blast Injury, Neurotrauma, Cellular Vulnerability and the Cost of Recovery*. 72<sup>nd</sup> Annual Meeting of the Japan Neurosurgical Society, Yokohama, Japan, October 16, 2013
223. *The Neurobiology of Traumatic Brain Injury*. Mission Connect Annual Scientific Symposium, Houston, TX, December 6, 2013
224. *Metabolic Implications of Concussion*. Major League Baseball 2013 Winter Meetings, Orlando, FL, December 7, 2013
225. *Metabolic Management of Brain Injury*. University of Texas Southwestern Medical Center Annual Symposium, Dallas, TX, May 1, 2014
226. *The Neurochemical and Neurometabolic Cascade of TBI and its Effect on Long Term Outcome*. Casa Colina Centers for Rehabilitation, Pomona, CA, September 4, 2014



**PUBLISHED MANUSCRIPTS IN REFEREED JOURNALS**

1. Feeney DM, **Hovda DA**. Amphetamine and apomorphine restore tactile placing after motor cortex injury in the cat. Psychopharmacology, 79(1):67-71, 1983
2. Walker AE, Feeney, DM, **Hovda DA**. The electroencephalographic characteristics of the rhombencephalectomized cat. Electroencephalography and Clinical Neurophysiology, 57(2): 156-165, 1984
3. **Hovda DA**, Feeney DM. Amphetamine with experience promotes recovery of locomotor function after unilateral frontal cortex injury in the cat. Brain Research, 298(2): 358-361, 1984
4. Feeney DM, **Hovda DA**. Reinstatement of binocular depth perception by amphetamine and visual experience after visual cortex ablation. Brain Research, 342(2):352-356, 1985
5. Feeney DM, Sutton RL, Boyeson MG, **Hovda DA**, Dail WG. The locus coeruleus and cerebral metabolism: Recovery of function after cortical injury. Physiological Psychology, 13(3):197-203, 1985
6. Feeney DM, Bailey BY, Boyeson MG, **Hovda DA**, Sutton RL. The effect of seizures on recovery of function following cortical contusion in the rat. Brain Injury, 1(1):27-32, 1987
7. **Hovda DA**, Sutton RL, Feeney DM. Recovery of tactile placing after visual cortex ablation in cat: A behavioral and metabolic study of diaschisis. Experimental Neurology, 97(2):391-402, 1987
8. Villablanca JR, Gómez-Pinilla F, Sonnier BJ, **Hovda DA**. Bilateral pericruciate cortical innervation of the red nucleus in cats with adult or neonatal cerebral hemispherectomy. Brain Research, 453(1-2):17-31, 1988
9. Fisher RS, Sutton RL, **Hovda DA**, Villablanca JR. Corticorubral connections: Ultrastructural evidence for homotypical synaptic reinnervation after developmental deafferentation. Journal of Neuroscience Research, 21(2-4):438-446, 1988
10. **Hovda DA**, Villablanca JR. Depth perception in cats after cerebral hemispherectomy: Comparisons between neonatal- and adult-lesioned animals. Behavioural Brain Research, 32(3):231-240, 1989
11. Teresi LM, **Hovda DA**, Seeley AB, Nitta K, Lufkin RB. MR imaging of experimental demyelination. American Journal of Roentgenology, 152(6):1291-1298, 1989
12. **Hovda DA**, Sutton RL, Feeney DM. Amphetamine-induced recovery of visual cliff performance after bilateral visual cortex ablation in cats: Measurements of depth perception thresholds. Behavioural Neuroscience, 103(3):574-584, 1989
13. Sutton RL, **Hovda DA**, Feeney DM. Amphetamine accelerates recovery of locomotor function following bilateral frontal cortex ablation in cats. Behavioural Neuroscience, 103(4):837-841, 1989
14. Sutton RL, **Hovda DA**, Feeney DM. Intracerebral chromaffin cell autografts accelerate

functional recovery in adult cats with unilateral frontal cortex ablation. Brain Dysfunction, 2:201-210, 1989

15. **Hovda DA**, Villablanca JR. Quantitative study of neural degeneration following neonatal or adult cerebral hemispherectomy in cats. I. Retrograde effects in the medial geniculate thalamic nucleus. Brain Dysfunction, 2:221-236, 1989
16. Villablanca JR, **Hovda DA**. Quantitative study of neural degeneration following neonatal or adult cerebral hemispherectomy in cats. II. Transsynaptic effects in the superior colliculus and mammillary nuclei. Brain Dysfunction, 2:237-254, 1989
17. Villablanca JR, Shook BL, **Hovda DA**, Sutton RL. Transplantation of fetal frontal cortex onto degenerating thalamus of cats and kittens. Developmental Neuroscience, 12(1):1-10, 1990
18. **Hovda DA**, Villablanca JR. Sparing of visual field perception in neonatal but not adult cerebral hemispherectomized cats. Relationship with oxidative metabolism of the superior colliculus. Behavioural Brain Research, 37(2):119-132, 1990
19. Katayama Y, Becker DP, Tamura T, **Hovda DA**. Massive increases in extracellular potassium and the indiscriminate release of glutamate following concussive brain injury. Journal of Neurosurgery, 73(6):889-900, 1990
20. Chugani HT, **Hovda DA**, Villablanca JR, Phelps ME, Xu WF. Metabolic maturation of the brain: A study of local cerebral glucose utilization in the developing cat. Journal of Cerebral Blood Flow and Metabolism, 11(1):35-47, 1991
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26. **Hovda DA**, Becker DP, Katayama Y. Secondary injury and acidosis. Journal of Neurotrauma, 9(1):S47-S60, 1992

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31. Villablanca JR, **Hovda DA**, Jackson GF, Gayek R. Neurological and behavioral effects of a unilateral frontal cortical lesions in fetal kittens: I. Brain morphology, movement, posture, and sensorimotor tests. Behavioural Brain Research, 57(1):63-77, 1993
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35. Loopuijt LD, Villablanca JR, **Hovda DA**. Morphological changes in the thalamus and neocortex of the cat brain after a restricted unilateral prenatal neocortical lesion. Developmental Brain Research, 85:259-272, 1995
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43. Prins ML, Lee SM, Cheng CLY, Becker DP, **Hovda DA**. Fluid percussion brain injury in the developing and adult rat: a comparative study of mortality, morphology, intracranial pressure and mean arterial blood pressure. Developmental Brain Research, 95:272-282, 1996
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David A. Hovda, PhD

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